

VPH-722Q/1020Q

SERVICE MANUAL

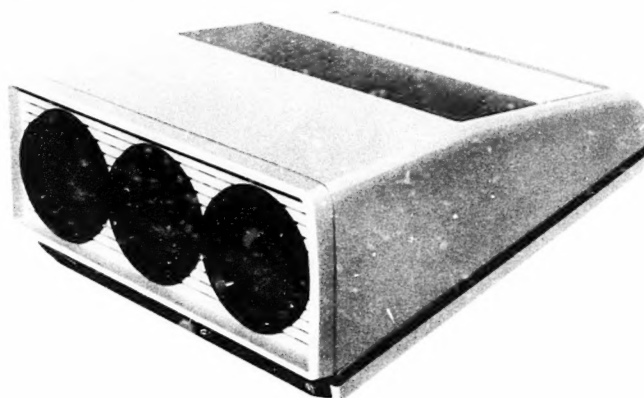
US Model

VPH-722Q

Chassis No. SCC-513A-A

VPH-1020Q

Chassis No. SCC-520A-A



September, 1983

SPECIFICATIONS

Optical

Projection system	3 picture tubes, 3 lenses, direct projection system
Picture tube	5.5-inch high-brightness monochrome tubes, with coolant sealed
Projection lens	High-performance acrylic lenses F 1.0/130 mm
Projected picture size	VPH-722Q: 72 inches measured diagonally
	VPH-1020Q: 100 inches measured diagonally
Picture brightness (obtained with a curved screen of gain 12)	VPH-722Q: More than 130 fL VPH-1020Q: More than 65 fL
Throwing distance	VPH-722Q: Approx. 2,480 mm (97 $\frac{3}{4}$ inches)
	VPH-1020Q: Approx. 3,368 mm (132 $\frac{3}{4}$ inches)
Viewing distance	VPH-722Q: 3 to 20 m
	VPH-1020Q: 4 to 25 mm

Power consumption VPH-722Q/1020Q: 165W (max.)

Dimensions Approx. 508 × 258 × 582 mm (w/h/d)
(20 × 10 $\frac{1}{4}$ × 23 $\frac{3}{8}$ inches)
with the brackets pushed down, incl. projecting parts and controls

Weight Approx. 26 kg (57 lb 5 oz)

Inputs

Signal	Connector	Signal level	Remarks
Video input	[VTR] 8-pin (pins 2&6)	1V (p-p)±0.2 V	PAL/SECAM/ NTSC/NTSC ₄₄₃ 75 ohms sync negative
	[VIDEO] BNC connector		
	[RGB IN] 5 BNC connectors	Non-composite RGB: 0.7V(p-p) ±0.15V or TTL level Sync: 0.5V(p-p) to 6V (p-p)	75 ohms, sync negative
Audio input	[VTR] 8-pin (pins 1&5)	-5 dBs (436 mV rms)	47 kilohms
	[AUDIO] minijack		

General

Color system	PAL, SECAM, NTSC and NTSC ₄₄₃ systems, switched automatically
Resolution	More than 600 TV lines (RGB inputs) More than 400 TV lines (video line inputs)
RGB inputs	Character display capacity: 2000 characters (80 letters × 25 lines) Horizontal frequency: 15.75 kHz Vertical frequency: 60 Hz Cross-hair/crosshatch test pattern generator is incorporated
Test signal	Approx. 5 × 9 cm (2 × 3 $\frac{5}{8}$ inches), 2 units
Speaker	
Power requirements	VPH-722Q/1020Q: 120V ac, 60 Hz

— Continued on next page —

COLOR VIDEO PROJECTOR
SONY®

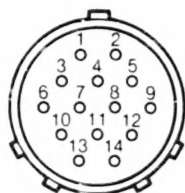


MON

VPH-722Q/1020Q

REMOTE connector

14-pin plug
For connecting the
VPR-722 remote controller




Pin No.	Signal	Pin. No.	Signal
1	Ground	8	Input select
2	+28V --- 60mA	9	Audio (incl. volume control)
3	Hue 1	10	Brightness
4	Hue 2	11	Sharpness
5	Hue 3	12	Color
6	Video	13	Picture
7	Ground (video)	14	Power ON: 12V OFF: 0V

Accessory supplied AC power cord
Optional units/accessories

Remote controller VPR-722
Projector pedestal SU-722
Projector suspension support PSS-722
Video screen VPS-100F1 (100" flat)
VPS-72HG1 (72" curved)
VPS-100HG1 (100" curved)
Carrying case VLC-722
CCQ cables

While the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

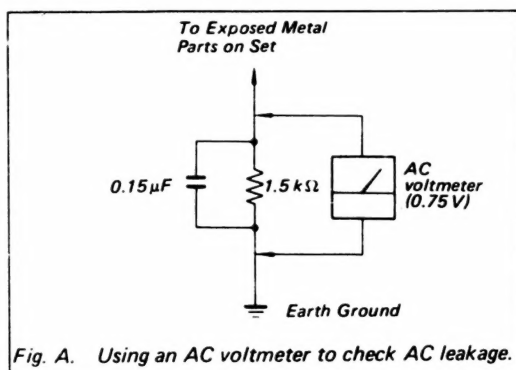
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.



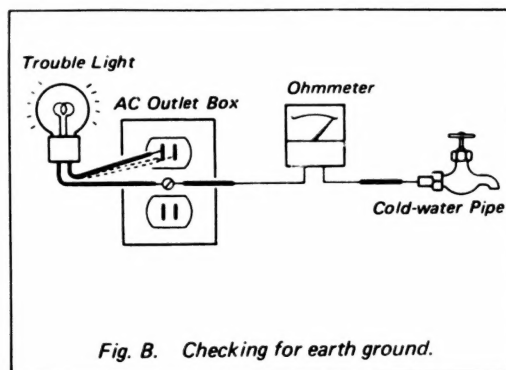
LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 220 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

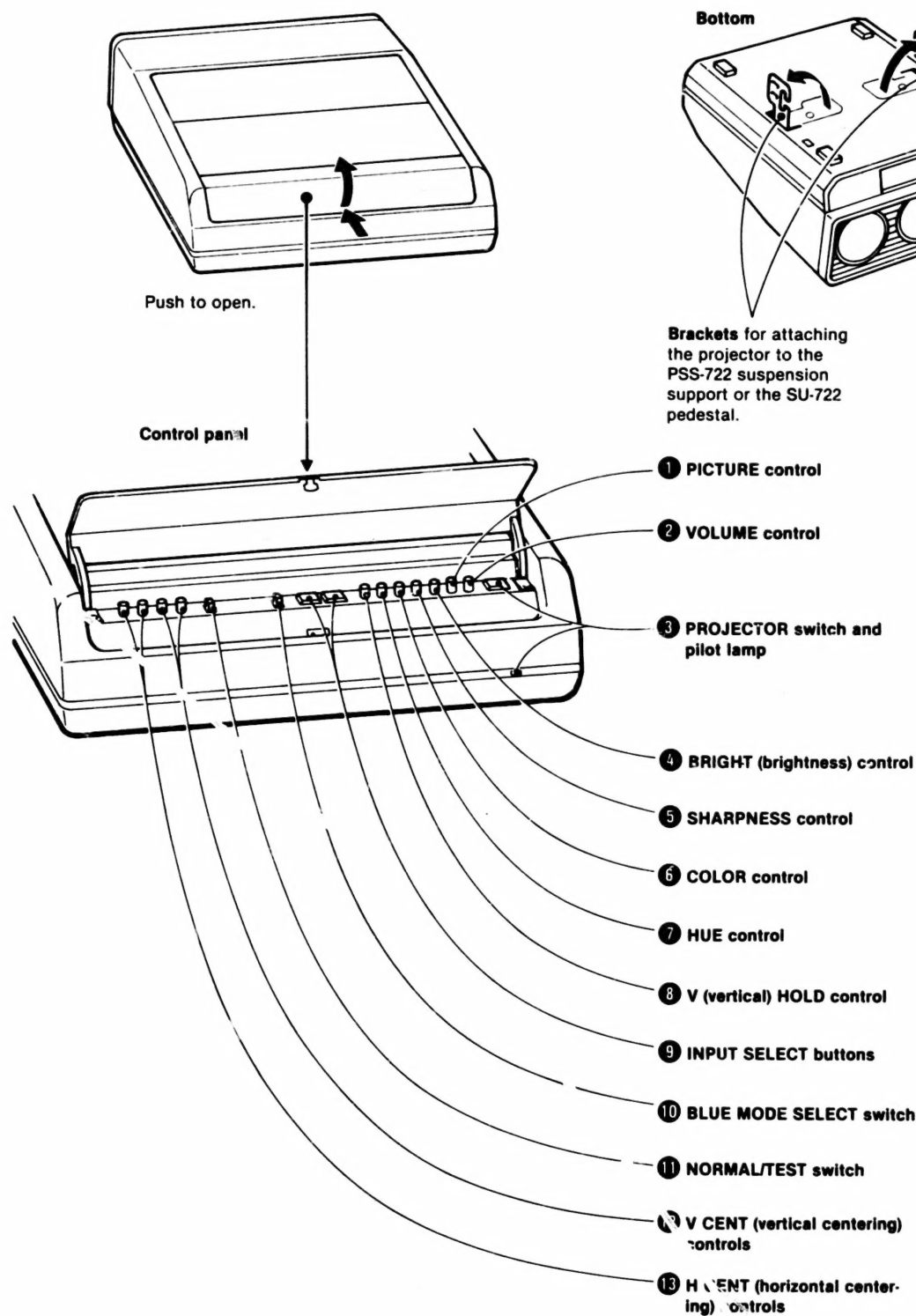
HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)



SECTION 1 GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS



● **PICTURE control**

Adjusts the contrast, color intensity and brightness simultaneously in the proper ratio.

● **VOLUME control**

Adjusts the volume.

● **PROJECTOR switch**

Depress to turn the projector on. The green pilot lamp will light. To turn off, press the switch again.

● **BRIGHT (brightness) control**

Adjusts the brightness.

● **SHARPNESS control**

Adjusts the sharpness. Clockwise rotation makes the picture sharp; counterclockwise rotation makes it soft.

● **COLOR control**

Adjusts the color intensity. Clockwise rotation makes the picture vivid; counterclockwise rotation makes it pale.

● **HUE control**

This control is effective only for a program of the NTSC or NTSC_{4.43} color system. Use to obtain the most natural skin tones. Clockwise rotation makes the skin tones greenish; counterclockwise rotation makes them purplish.

● **V (vertical) HOLD control**

If the picture rolls vertically, adjust this control until the picture stabilizes.

● **INPUT SELECT buttons**

Press to select the program source to be projected.

LINE: For inputs from the LINE IN connectors

RGB: For inputs from the RGB IN connectors

If audio signals are connected to the LINE IN, the sound will be heard.

● **BLUE MODE SELECT switches**

This switch is effective only for RGB inputs.

Usually set to NORMAL. Set to BB (blue background) to change the black background of the display to blue, and to CB (clear blue) to lighten blue part of the display.

The display should become easier to view.

● **NORMAL/TEST switch**

Usually set to NORMAL to project inputs from the LINE IN or RGB connectors.

Set to TEST to display the built-in cross-hair pattern on the screen for easier adjustments of the projector's position and registration.

● **V CENT (vertical centering) controls**

Adjust vertical registration of red and blue.

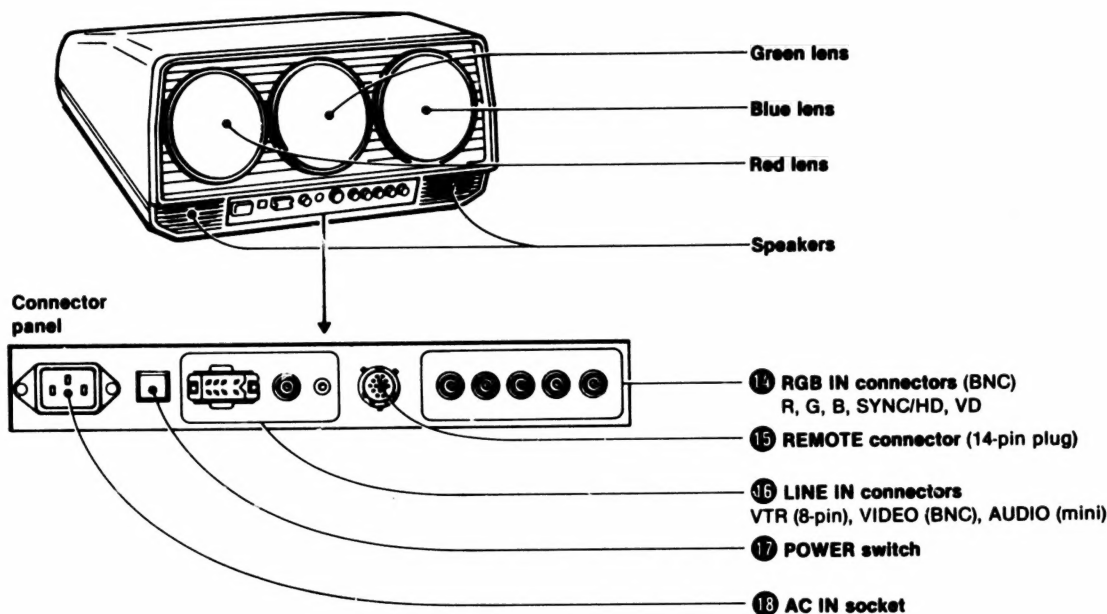
● **H CENT (horizontal centering) controls**

Adjust horizontal registration of red and blue.

● ● ● controls do not function for RGB inputs.

To project RGB inputs of TTL level in better condition, slightly darken the display by turning the PICTURE and BRIGHT controls counterclockwise.

● through ● do not function when the VPR-722 remote controller is connected to the REMOTE connector. The same controls on the VPR-722 are operative.



14 RGB IN connectors (BNC)

Allow a character generator, microcomputer, video camera or a special adaptor for future videotext/teletext having digital or analog RGB outputs to be connected.

R, G, B: to RGB outputs

SYNC/HD: to a composite sync or horizontal sync output

VD: to a vertical sync output

15 REMOTE connector (14-pin plug)

To remotely control the projector, for instance, when it is installed on the ceiling, connect the optional VPR-722 remote controller here using the optional CCQ connecting cable.

16 LINE IN connectors

Allow a video tape recorder, video camera, color receiver/monitor, etc. having video/audio line outputs to be connected.

VTR (8-pin): to an 8-pin TV connector on a VTR

VIDEO (BNC): to a video line output

AUDIO (mini): to an audio line output

Caution: Use either the VTR or VIDEO/AUDIO connectors, but not both simultaneously.

Do not connect a TV tuner or a color receiver/monitor equipped with an 8-pin connector to the VTR connector, because signal assignment is different.

17 POWER switch

Depress to turn the power on. When the VPR-722 remote controller is used, power will be supplied to the controller.

18 AC IN socket

Connect the supplied ac power (mains) cord here and to an ac (mains) outlet.

WARNING for the customers in the United Kingdom

THIS APPARATUS MUST BE EARTHED to your 3-pin plug in accordance with following instructions.

Important

The wires in the mains lead are coloured in accordance with the following code;

Green-and-yellow Earth (Safety earth)

Blue Neutral

Brown Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol \perp or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

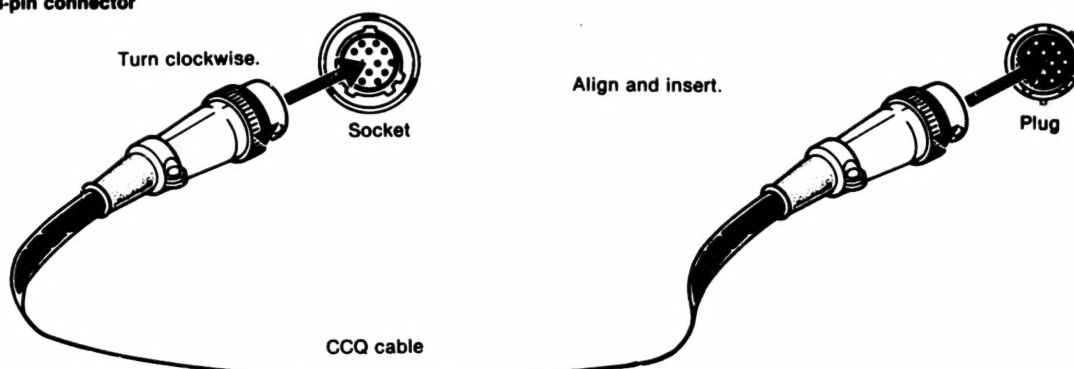
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

1-2. SYSTEM CONNECTIONS

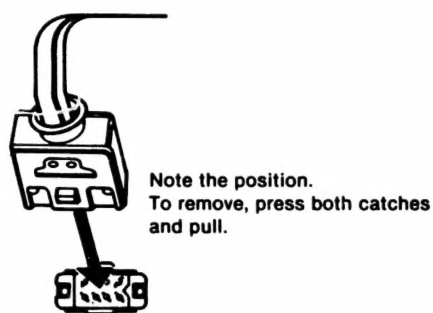
CONNECTING NOTES

- First make sure that the power to each piece of equipment is turned off.
- Use suitable connecting cables according to the equipment to be connected.
- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.

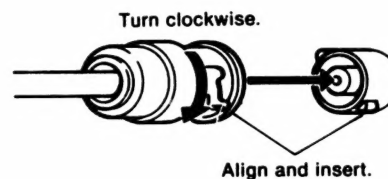
14-pin connector



8-pin connector



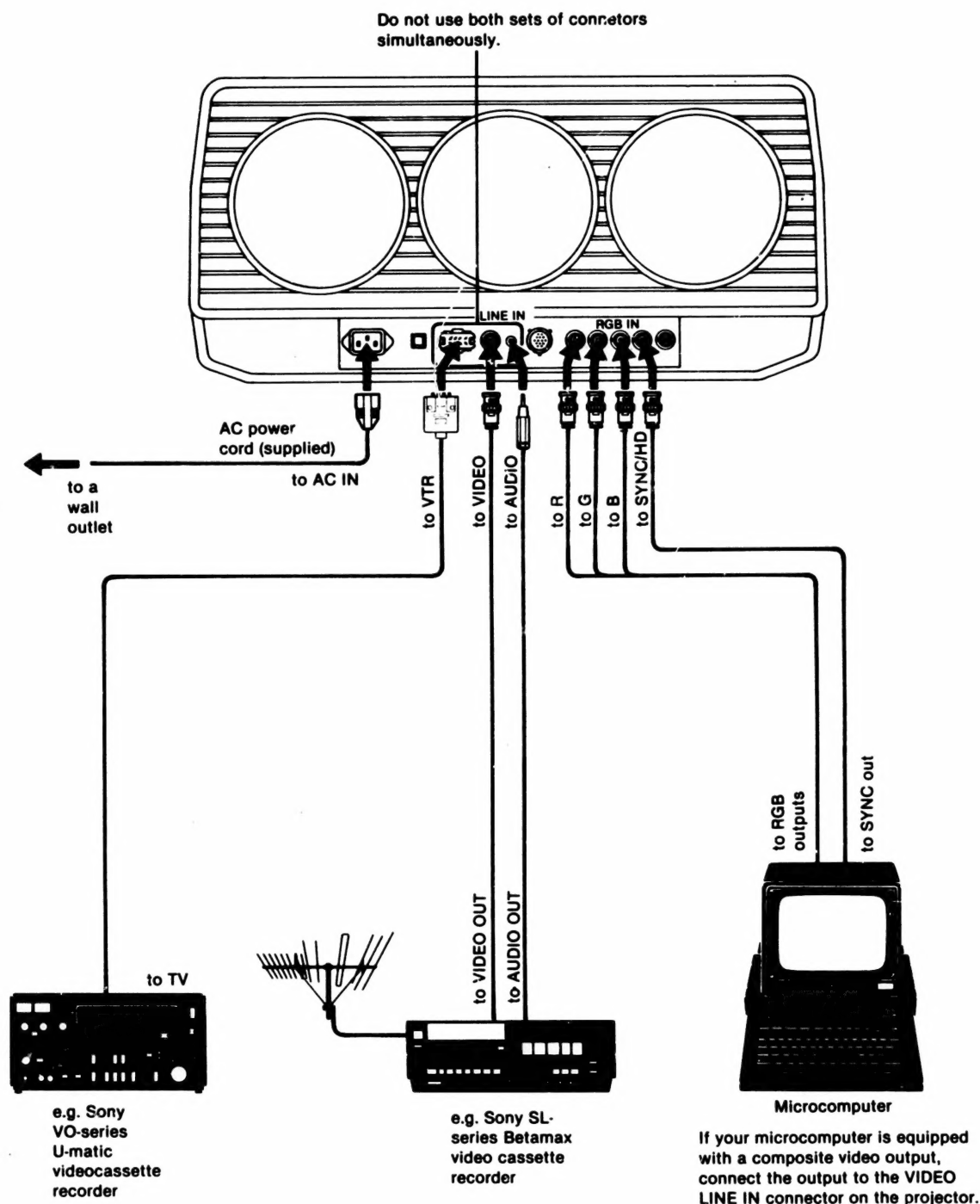
BNC connector



- The cable may be extended to max. 50m. If the connecting cable is too long (longer than 50 m), picture quality may be degraded somewhat.
- To disconnect the cable, pull it out by grasping the plug. Never pull the cable itself.
- Read the instruction manual of the equipment to be connected.

EXAMPLES OF CONNECTIONS

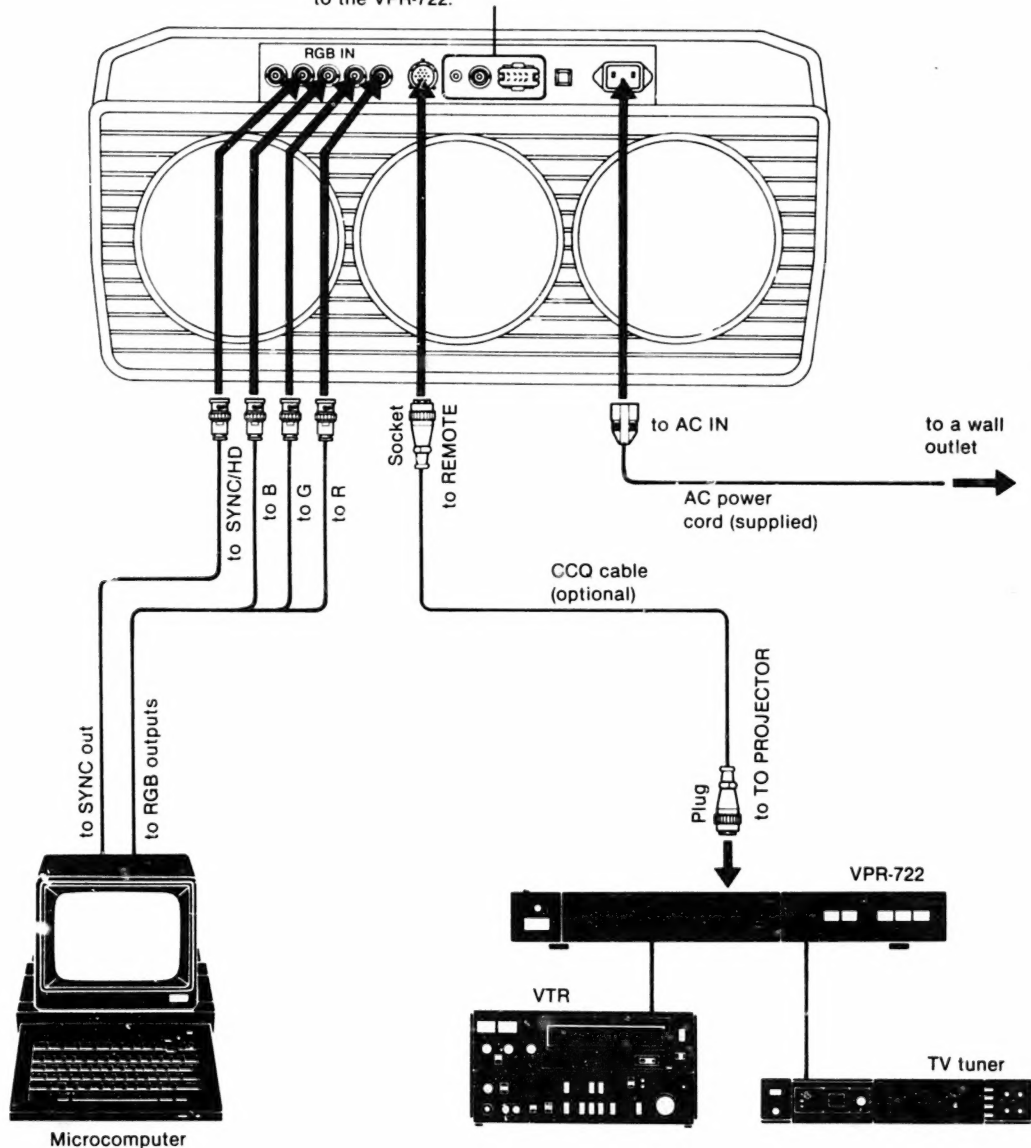
Using the projector without the VPR-722 remote controller



Using the projector with the VPR-722 remote controller

Use the optional VPR-722 remote controller when the projector is installed on the ceiling or at a distance from your seat. Power on/off, program selection and picture adjustments can be remotely controlled.

The LINE IN connectors will be disconnected automatically when the VPR-722 is connected. Connect a VTR, TV tuner, video camera, etc. to the VPR-722.



If your microcomputer is equipped with a composite video output, connect the output to the VIDEO LINE IN connector on the controller.

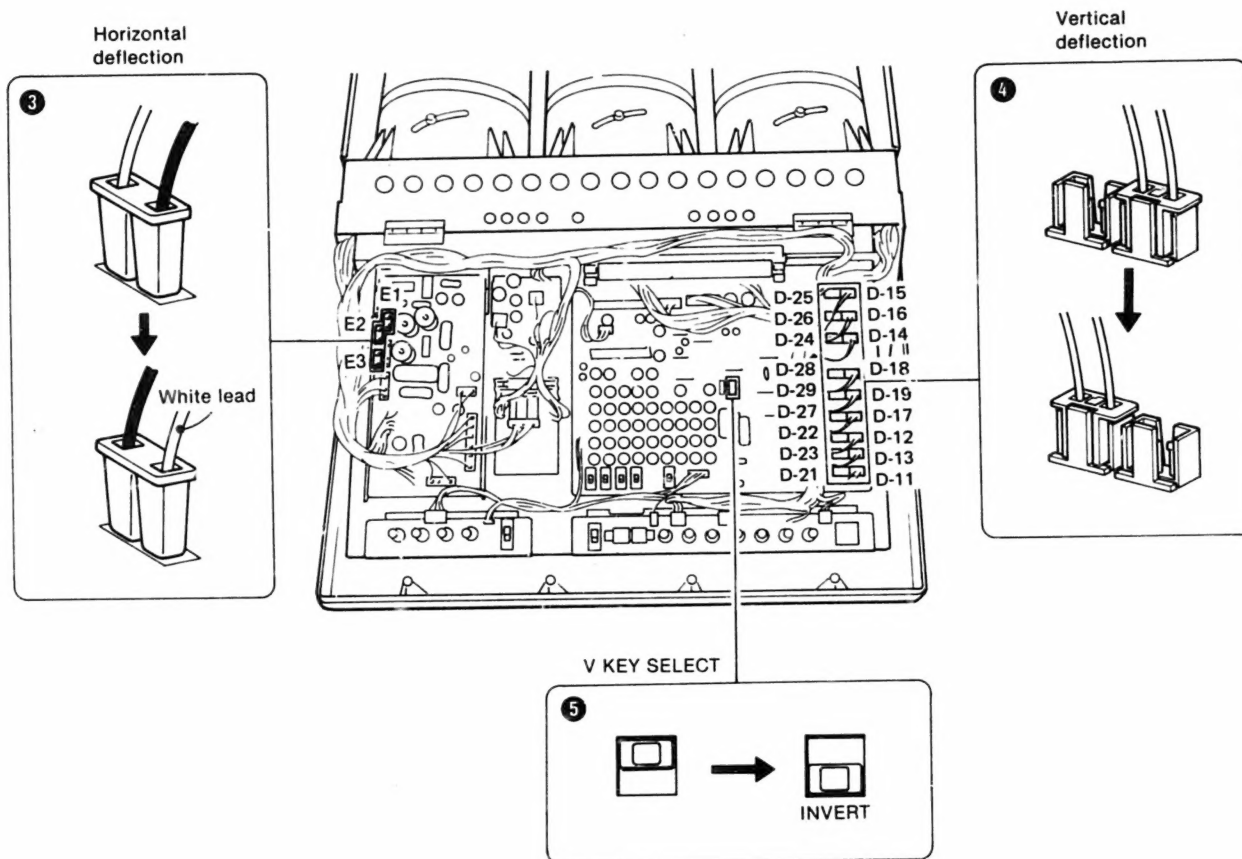
For details on the connections, see the instruction manual of the VPR-722.

1-3. POLARITY CHANGE

The projector is preadjusted at the factory to be used on the desk with the bracket side down.

When the projector is installed on the ceiling with the bracket side up, the polarity should be changed.

- ① Make sure that the power is not connected.
- ② Open the cabinet.
- ③ Reverse the polarity of connectors E1, E2 and E3.
- ④ Move the connectors from the right D-11 through D-19 receptacles to the left D-21 through D-29 receptacles.
- ⑤ Set the V KEY SELECT switch to INVERT.



Check that the connectors are inserted firmly, then proceed with the lens focus adjustment with the projector's cabinet open.

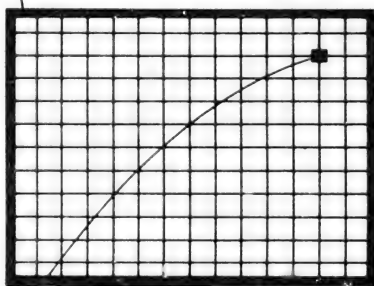
1-4. LENS FOCUS ADJUSTMENT

- 1 Open the cabinet.
- 2 Install the projector to the proper position on the floor or the ceiling.
- 3 Connect the power cord supplied to the AC IN socket and to an ac outlet, turn on the POWER switch on the connector panel, then turn the PROJECTOR switch on. The green lamp will light up.
- 4 Set the NORMAL/TEST switch to TEST and the TEST switch to HATCH. A cross hatch pattern will be displayed.
- 5 Check the following.

Does the screen fit inside the white frame?



If not, adjust the position of the projector.

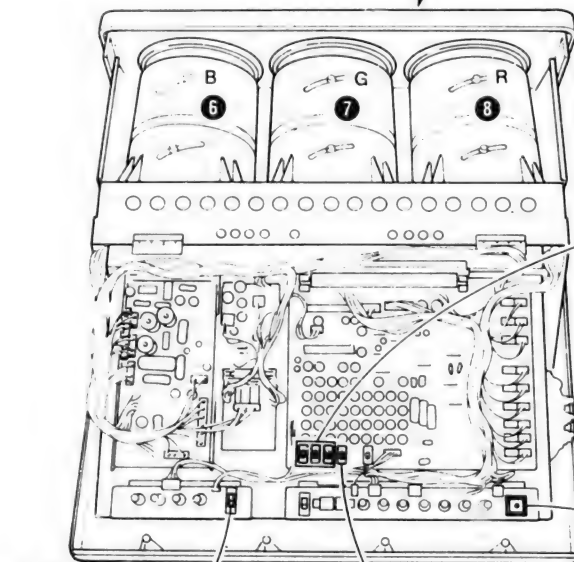


Does a white marker appear here?



If not, the polarity change has not been properly made. Check the steps on page 10.

3 POWER
ON



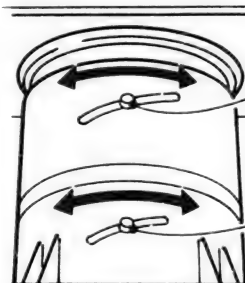
4 NORMAL/TEST



4 TEST



- 5 Set the G (green) and R (red) CUT OFF switches to ON, then adjust the focus of the blue lens.



2) Loosen the screw, adjust the focus on the corners, then tighten the screw.

1) Loosen the screw, adjust the focus on the corners, then tighten the screw.

- 7 Set only the G CUT OFF switch to OFF and the other switches to ON, then adjust the focus of the green lens.
- 8 Set only the R CUT OFF switch to OFF and the other switches to ON, then adjust the focus of the red lens.
- 9 Close the cabinet.

Caution

Take care not to touch portions of the projector other than these indicated below because dangerous high voltages are present. To change the polarity, first turn the POWER switch off.

	B CUT OFF	G CUT OFF	R CUT OFF
6			
7			
8			

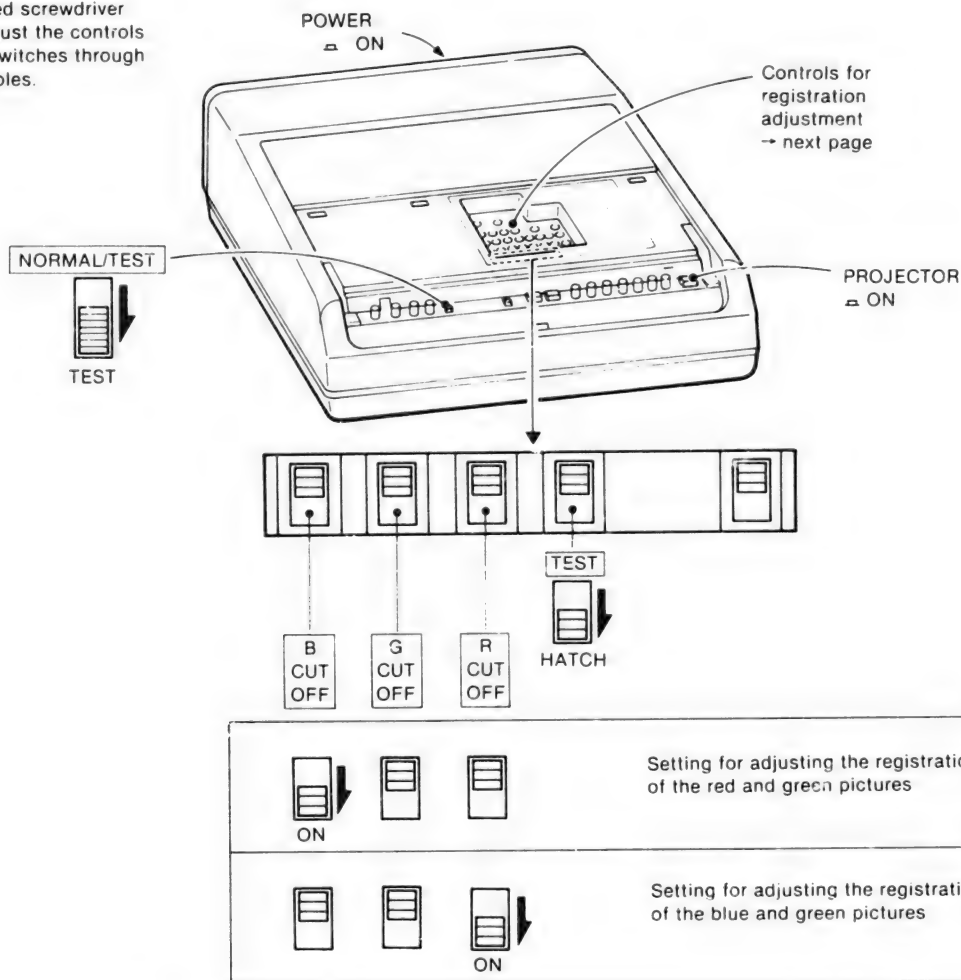
3 PROJECTOR
ON

Proceed with the registration adjustment.

1-5. REGISTRATION ADJUSTMENT

Location of controls

Use a small, flat-headed screwdriver to adjust the controls and switches through the holes.



For installation types ② and ④, check the cross hatch pattern referring to page 11.

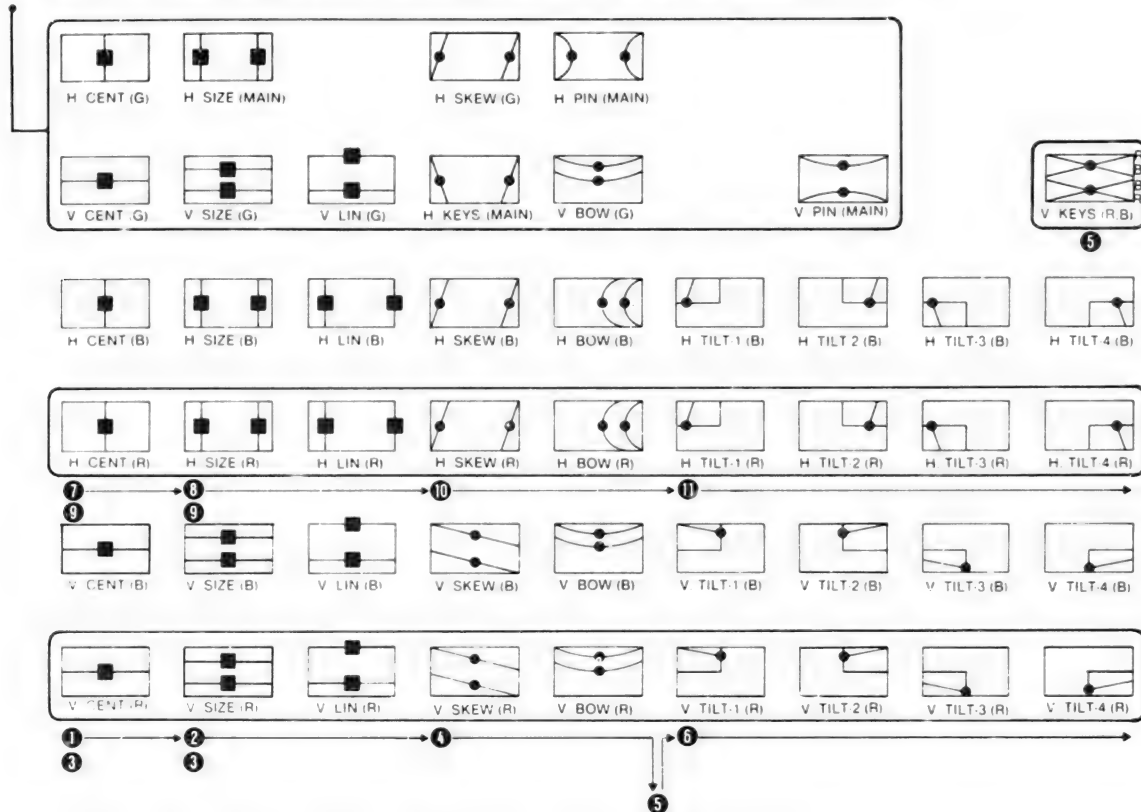
Vertical registration of the red and green pictures

- ① Adjust the V. CENT (R) control so that the red horizontal lines and the green horizontal lines converge in the middle of the screen.
- ② Adjust the V. SIZE (R) and V. LIN (R) controls so that the red horizontal lines and the green horizontal lines converge at the upper and lower sides of the screen.
- ③ Repeat steps ① and ② as necessary.
- ④ Adjust the V. SKEW (R) and V. BOW (R) controls so that the red horizontal lines and the green horizontal lines converge in the middle of the screen.
- ⑤ Adjust the V. KEYS (R, B) control so that the red horizontal lines at the top and bottom of the screen are parallel.
- ⑥ Adjust the V. TILT-1 (R) to -4 (R) controls so that the red horizontal lines and the green horizontal lines converge in the corners of the screen.

Horizontal registration of the red and green pictures

- ⑦ Adjust the H. CENT (R) control so that the red vertical lines and the green vertical lines converge in the middle of the screen.
- ⑧ Adjust the H. SIZE (R) and H. LIN (R) controls so that the red vertical lines and the green vertical lines converge at the right and left sides of the screen.
- ⑨ Repeat steps ⑦ and ⑧ as necessary.
- ⑩ Adjust the H. SKEW (R) and H. BOW (R) controls so that the red vertical lines and the green vertical lines converge in the middle of the screen.
- ⑪ Adjust the H. TILT-1 (R) to -4 (R) controls so that the red vertical lines and the green vertical lines converge at the corners of the screen.

These controls are used if the basic green picture must be adjusted. The H. SIZE (MAIN), H. KEYS (MAIN), H. PIN (MAIN) and V. PIN (MAIN) controls adjust the green, red and blue pictures simultaneously.



The numbered controls are used to adjust the registration of the red and green pictures. The numbers refer to the sequence of adjustment.

Proceed with the following adjustments in the same manner as with red and green registration except for the setting of the CUT OFF switches.

Vertical registration of the blue and green pictures

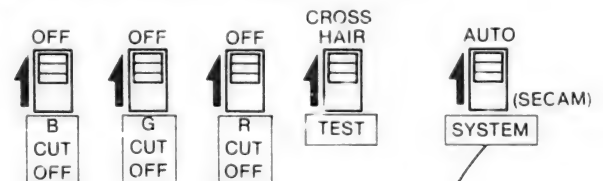
- 1 V. CENT (B) control
- 2 V. SIZE (B) and V. LIN (B) controls
- 3 Repeat steps 1 and 2.
- 4 V. SKEW (B) and V. BOW (B) controls
- 5 V. KEYS (R, B) control, if required
- 6 V. TILT-1 (B) to -4 (B) controls

Horizontal registration of the blue and green pictures

- 7 H. CENT (B) control
- 8 H. SIZE (B) and H. LIN (B) controls
- 9 Repeat steps 7 and 8.
- 10 H. SKEW (B) and H. BOW (B) controls
- 11 H. TILT-1 (B) to -4 (B) controls

When registration is complete

- 1 Set the switches to the following positions.



Set the SYSTEM switch to SECAM only when you connect a SECAM color source whose signal condition is poor.

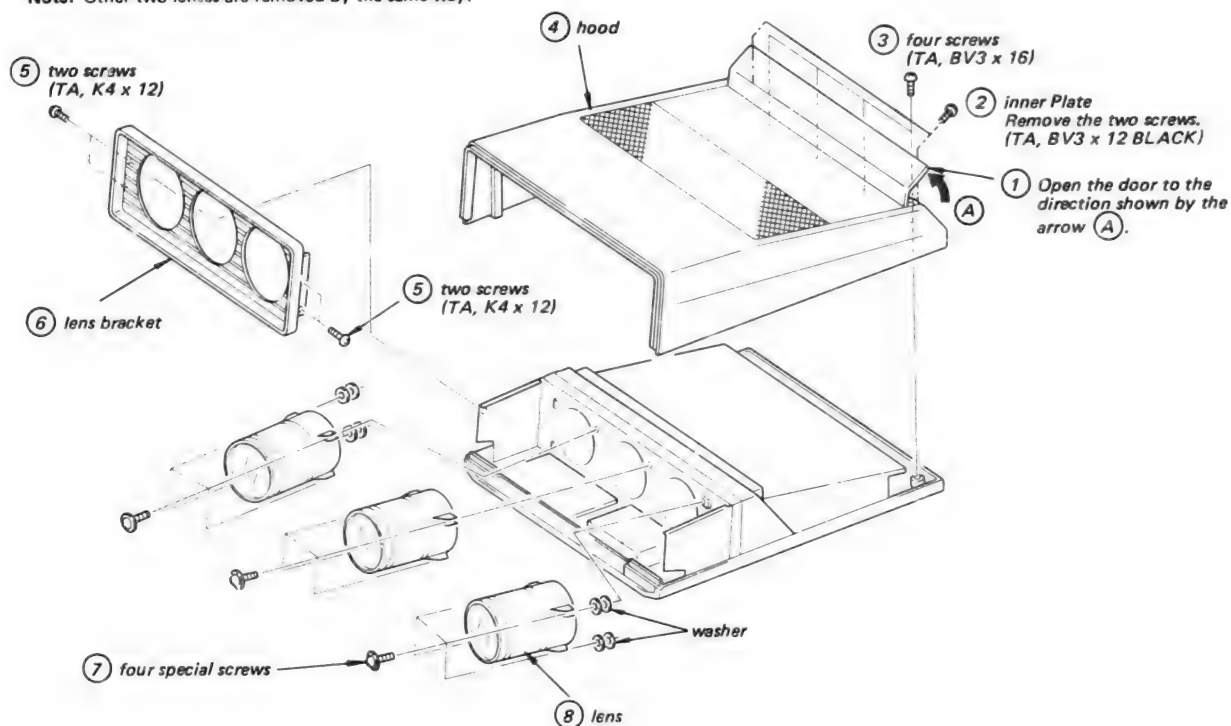
- 2 Replace the cover and tighten the two screws.

SECTION 2 DISASSEMBLY (AND REPLACEMENT)

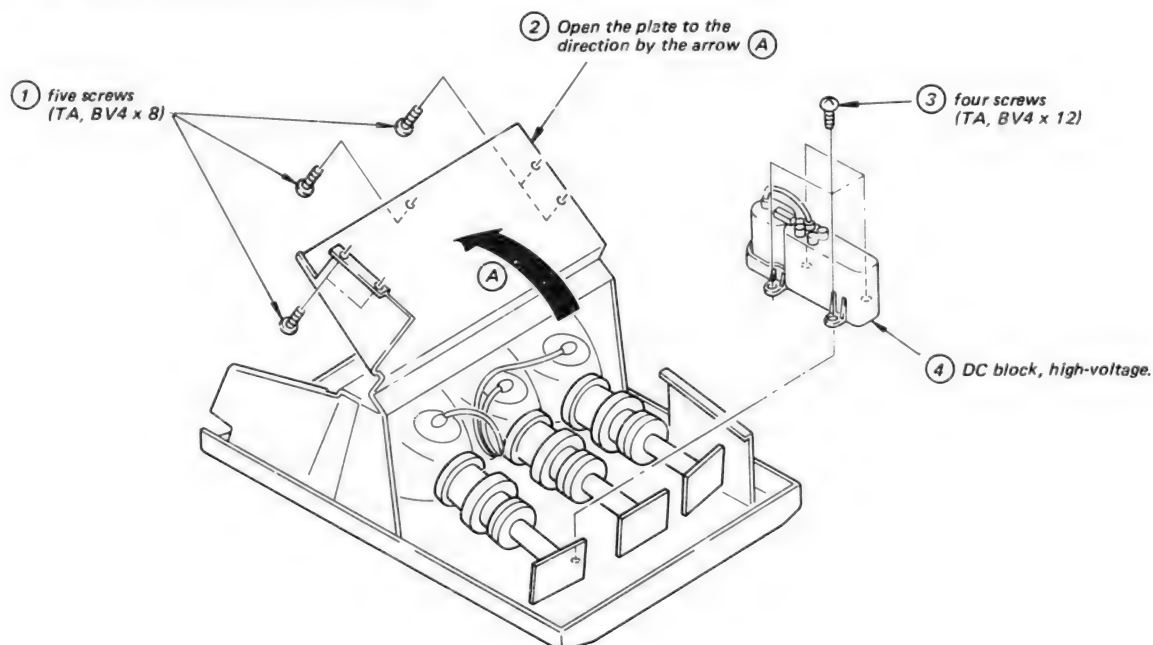
2-1. LENS REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

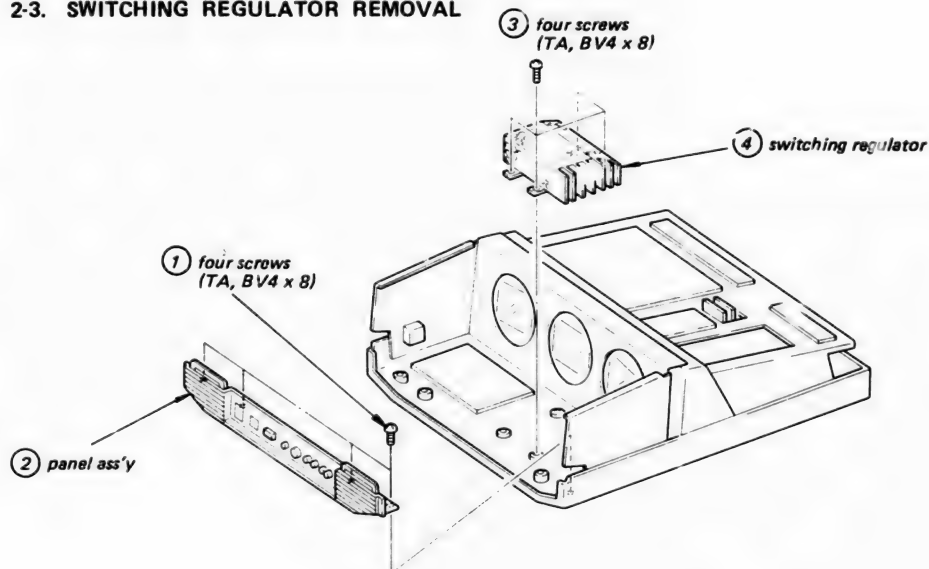
Note: Other two lenses are removed by the same way.



2-2. DC BLOCK, HIGH-VOLTAGE REMOVAL

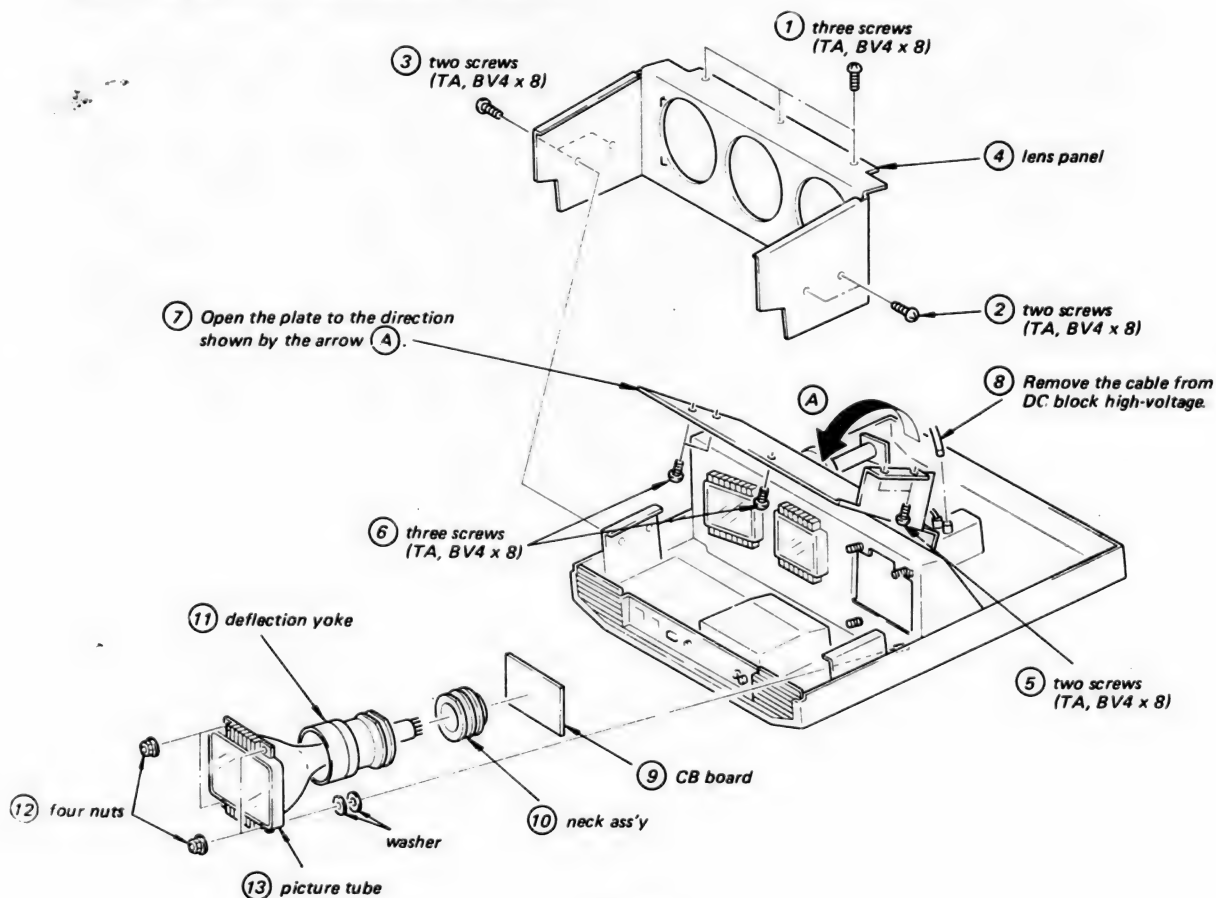


2-3. SWITCHING REGULATOR REMOVAL

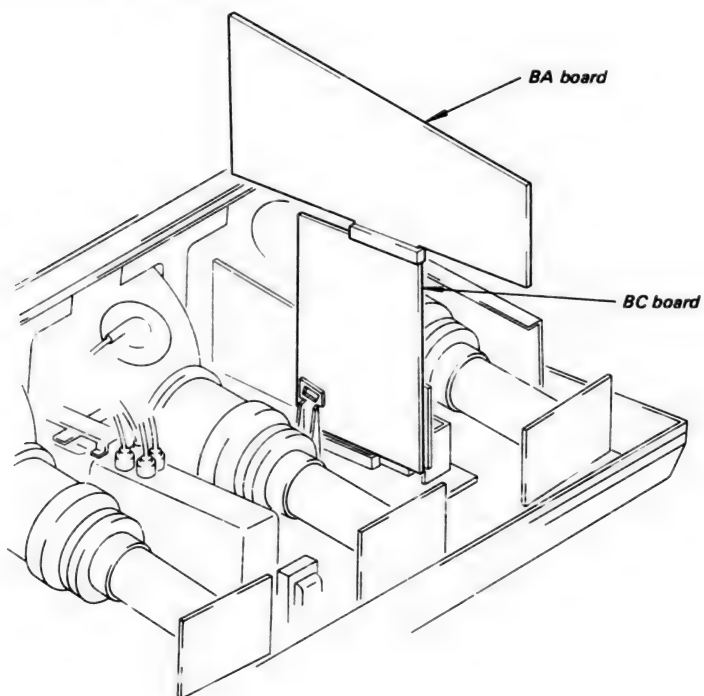


2-4. PICTURE TUBE REMOVAL

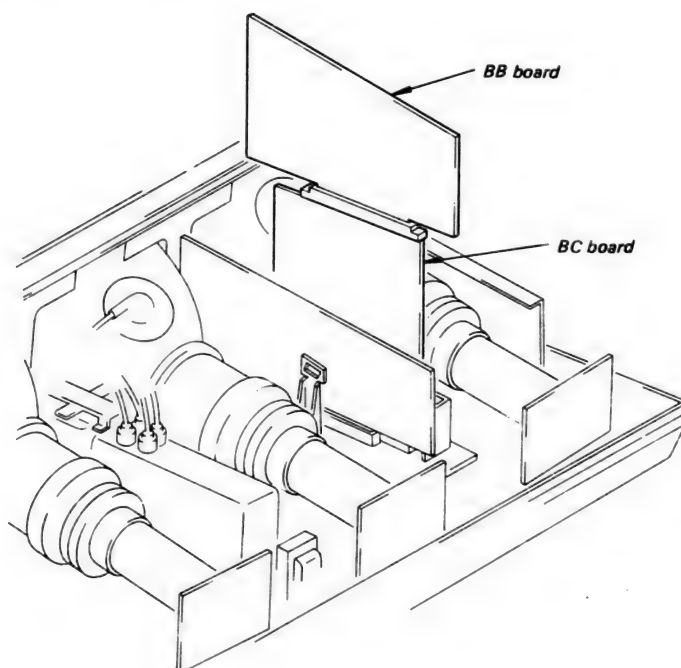
Note: Other two picture tubes are removed by the same way.



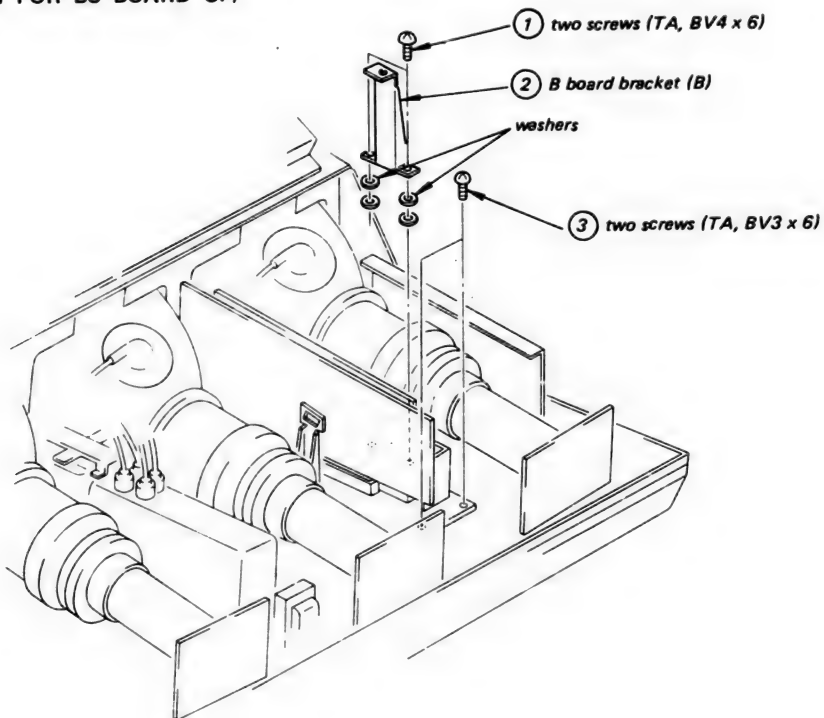
2-5. CHECKING FOR BA BOARD UP



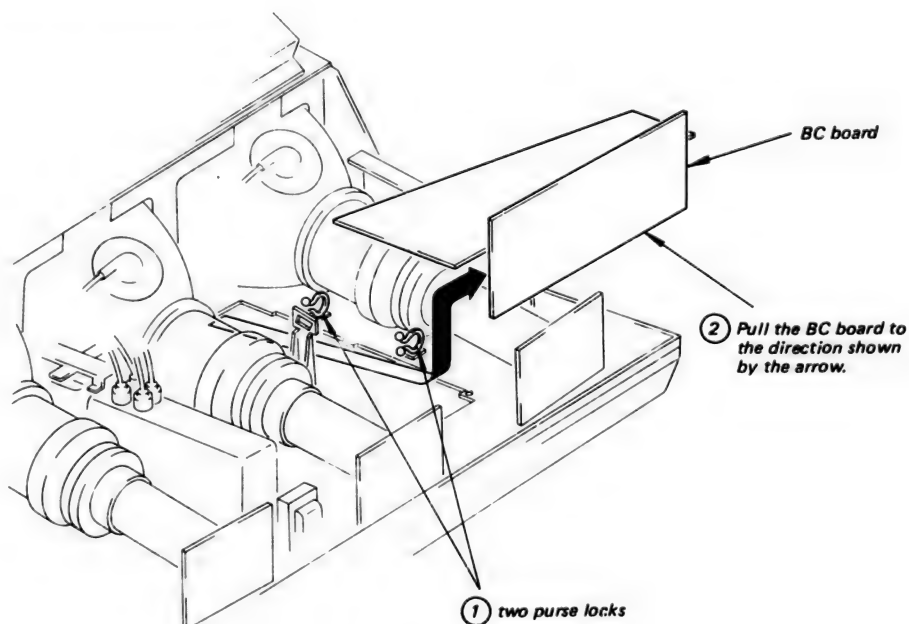
2-6. CHECKING FOR BB BOARD UP



2-7. BC BOARD REMOVAL (1)
(CHECKING FOR BC BOARD UP)



BC BOARD REMOVAL (2)
(CHECKING FOR BC BOARD UP)



SECTION 3

SAFETY RELATED ADJUSTMENT

3-1. E BOARD ADJUSTMENT

When replacing the following components, make the HV HOLD DOWN and HV REG adjustments.
E board with the parts mounted.
E board complete.

R951 in high tension DC block
Q11, Q10, D14
D15, D16, R35, R36, R39
R37, R38

When replacing the following components, make the HV REG adjustment.

R952 in high tension DC block
Q5, Q6, Q7, D6
D7, D9, D10, R18
R19, R20, R21, C23
R22

E board complete.
Q901, Q904

— When a high tension meter is available. —

R37, R38 HV HOLD DOWN Adjustment

- (1) Confirm that the POWER switch is in OFF position.
- (2) Connect the positive lead of the high tension meter to the HV. DC block and the negative lead to the ground lug beside the heat sink as shown in Fig. 3-1.

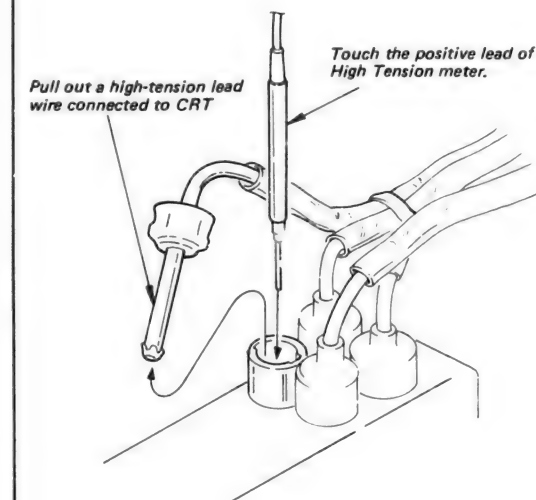
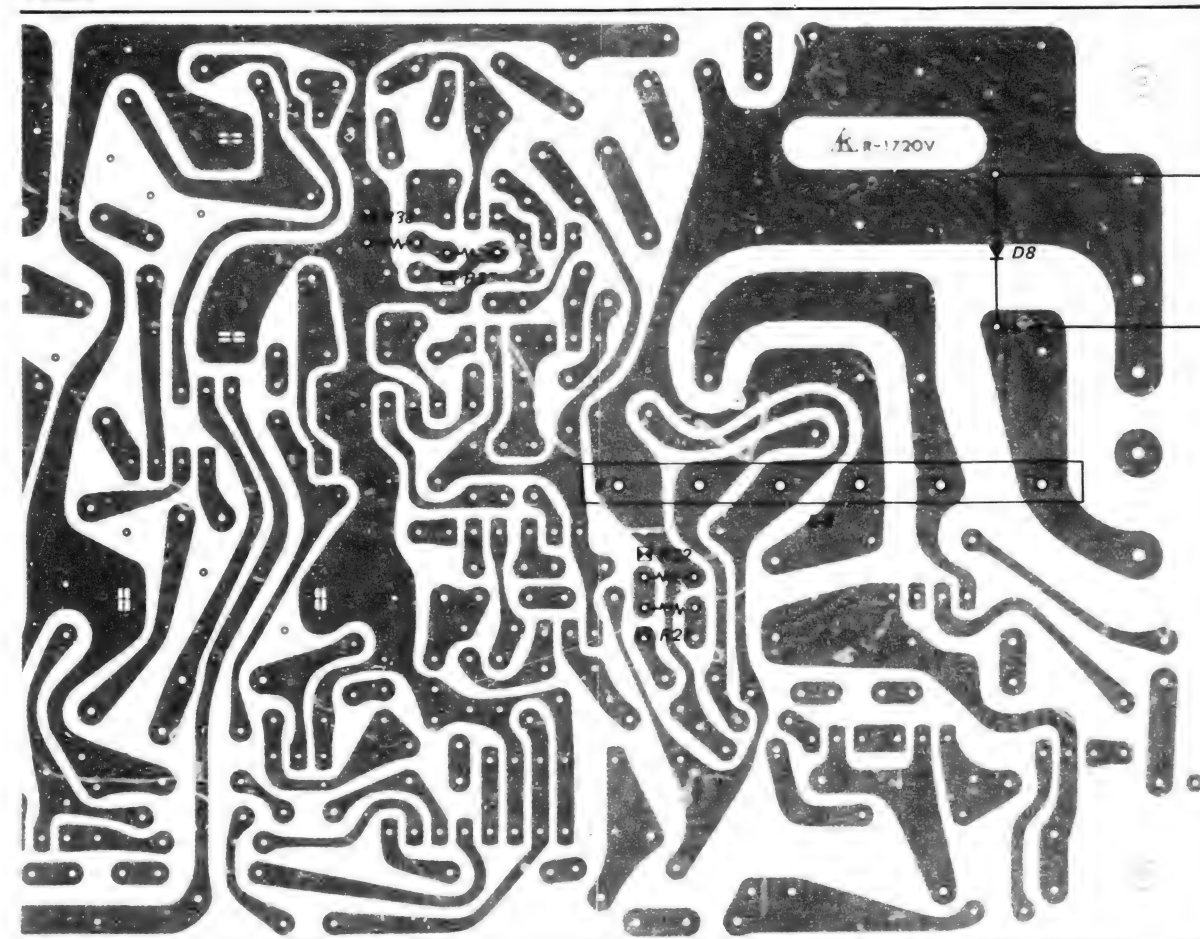


Fig. 3-1

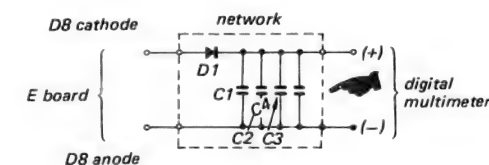
E Board



— When a high tension meter is not available —

R37, R38 HV HOLD DOWN Adjustment

- (1) Confirm that the POWER switch is in OFF position.
- (2) Make the following network and connect a digital multimeter as shown in Fig. 3-2.



Diode (D1): V-11N (8-719-901) (9)
Capacitors (C1-C4): 15,00 pF/1.5 kV polyethylene
(1-129-924-00)

Digital multimeter: Capable of measuring the voltages is more than 1,100 V.

Fig. 3-2

R21, R22 HV REG Adjustment

- (1) Confirm that the POWER switch is in OFF position.
- (2) Connect the positive lead of the high tension meter to the anode of the picture tube and the negative lead to the ground lug beside the heat sink.
- (3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current.
(Be sure to synchronize the picture).
- (4) Turn the POWER switch on ON and confirm that the voltage on the high tension meter is 30.8 kV \pm 0.3 kV.
- (5) If necessary, select R21 and R22 (1/4 W carbon resistor) and repeat above steps.
- (6) Turn the POWER switch to OFF and disconnect the positive and negative leads of the electrostatic voltmeter.
- (7) Disconnect the resistor and mount it.

- (3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current.
(Be sure to synchronize the picture).
- (4) Turn the POWER switch to ON and confirm that the power is automatically turned off just when the voltage on the digital multimeter is 955 \pm 5 V dc by connecting a resistor across R37 and R38.
(HV HOLD DOWN circuit operates).
- (5) If necessary, select R37 and R38 (1/4 W carbon resistor) and repeat above steps.
- (6) Turn the POWER switch to OFF.
- (7) Disconnect the resistor.
- (8) Perform the HV REG adjustment from step 4.

3-2. CR, CG AND CB BOARD ADJUSTMENT

G2 MAX. ADJUSTMENT

Be sure to perform the following adjustment after replacing the parts below (marked Δ on the schematic diagram).
Focus Pack, R11, R12, R13

- (1) Confirm that the POWER switch is in OFF position.
- (2) Set the G2 control at the minimum.
- (3) Power switch is in ON position and G2 control in maximum, and R. G. B cut OFF switch (D BOARD) to ON.
- (4) Confirm that the digital multi meter (A) indication is less than 1000 V ac.

Note:

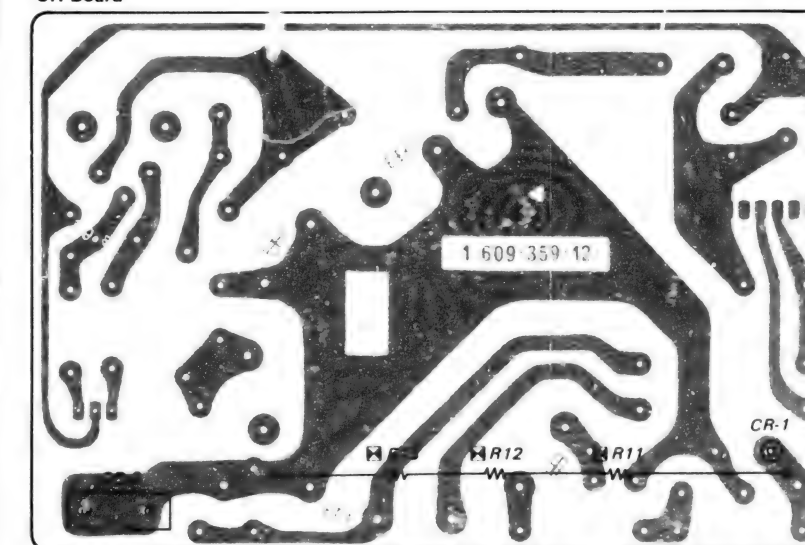
- When replacing the Focus Pack confirm on the each C board of R. G. B.
- When replacing the R11, R12, R13 confirm only about that board.

- (5) If this is not satisfied, change one of the R11, R12, R13 (15 M Ω \rightarrow 10 M Ω) resistance value.
- (6) Confirm that it is less than 1000 V.

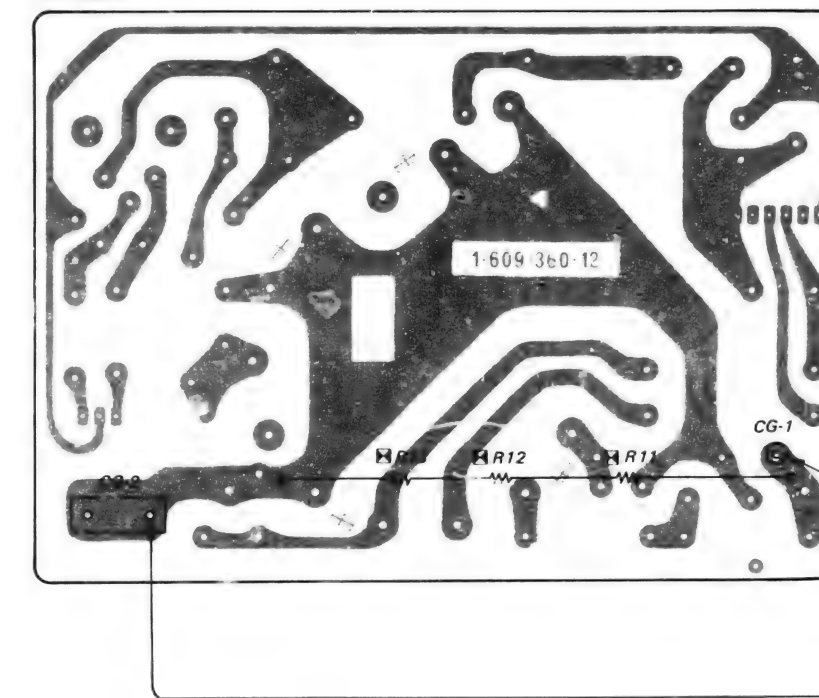
• H. V. HOLD DOWN OPERATION CHECKING

1. Turn the Power switch ON.
2. Confirm that the raster does appear.
3. Disconnect the E-11 connector from E Board.
4. Confirm that the HV. HOLD DOWN operate and confirm that the raster does disappear.
5. Turn the POWER switch OFF.
6. Connect the E-11 connector.

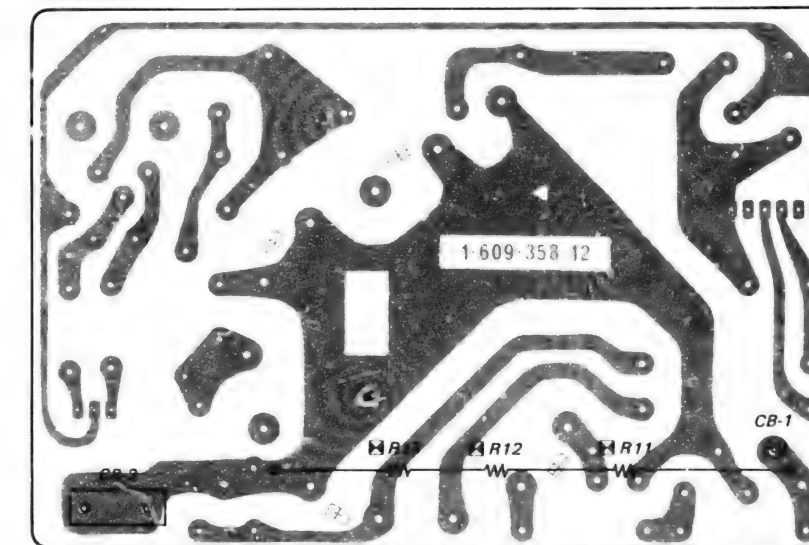
CR Board



CG Board



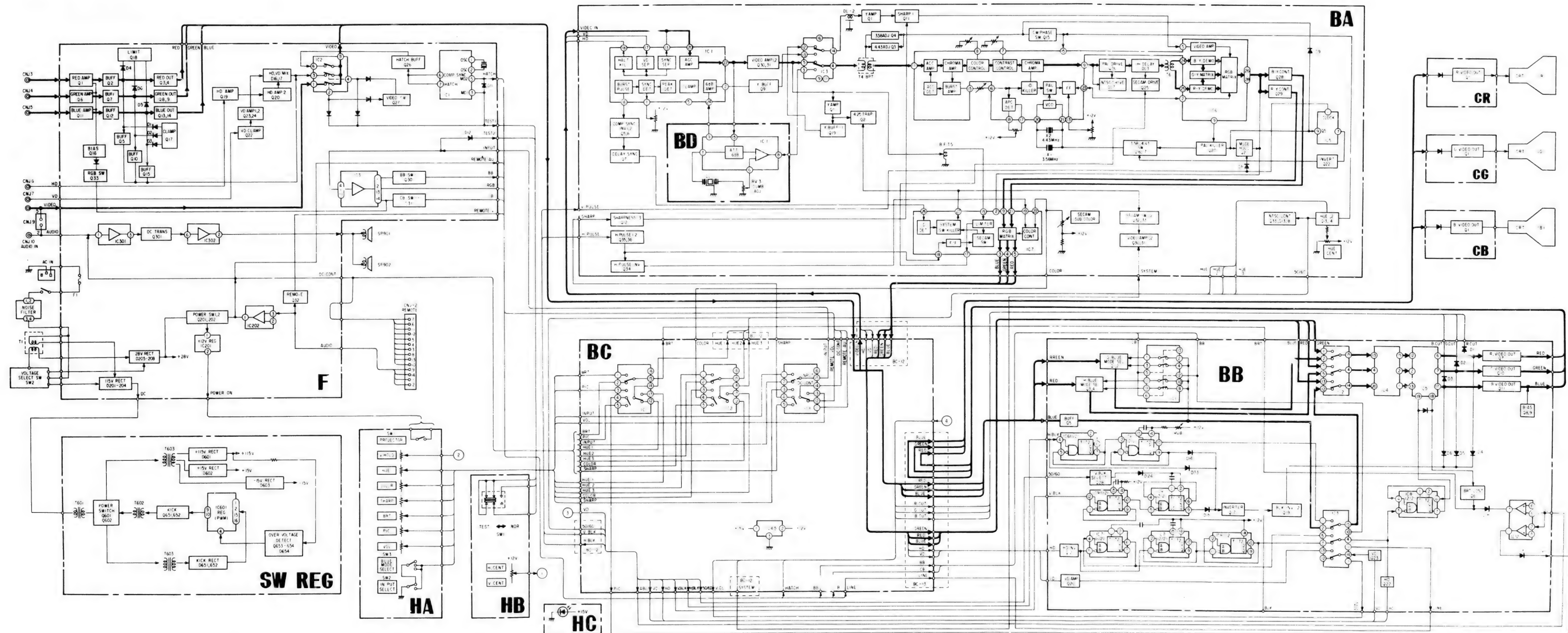
CB Board



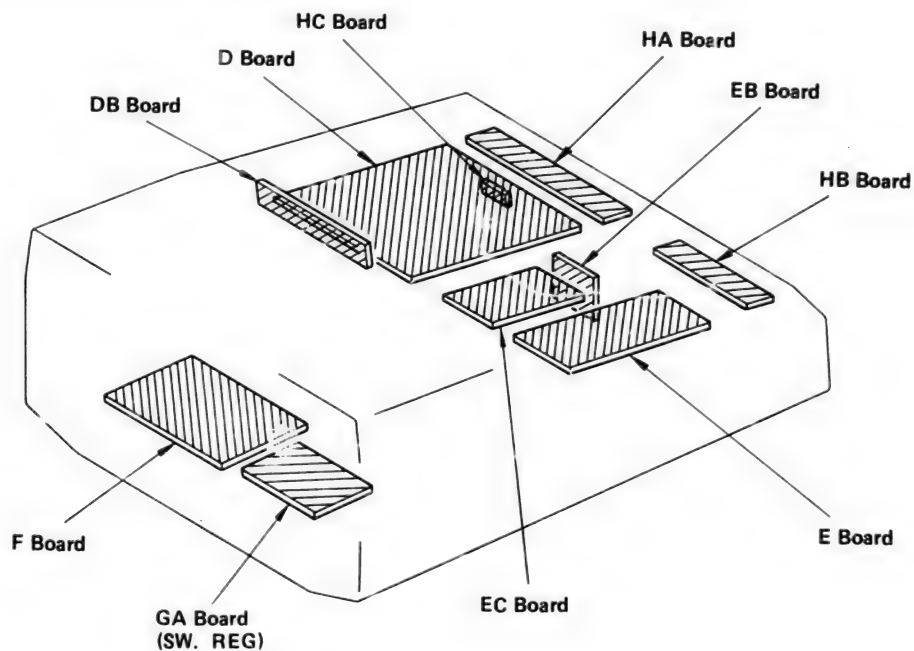
SECTION 4

DIAGRAMS AND CIRCUIT BOARDS LOCATION

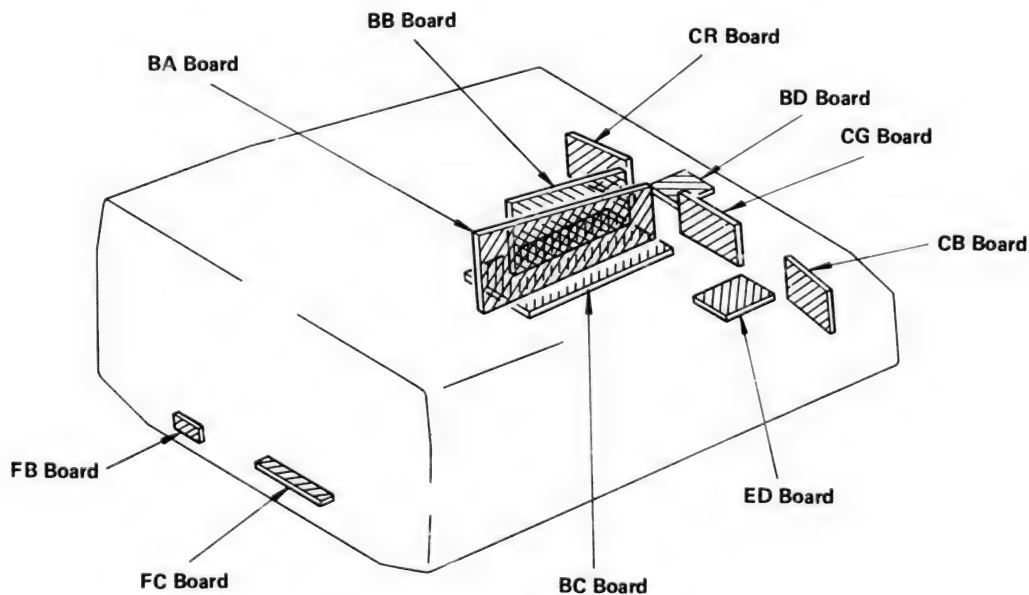
4-1. BLOCK DIAGRAM (1/2)



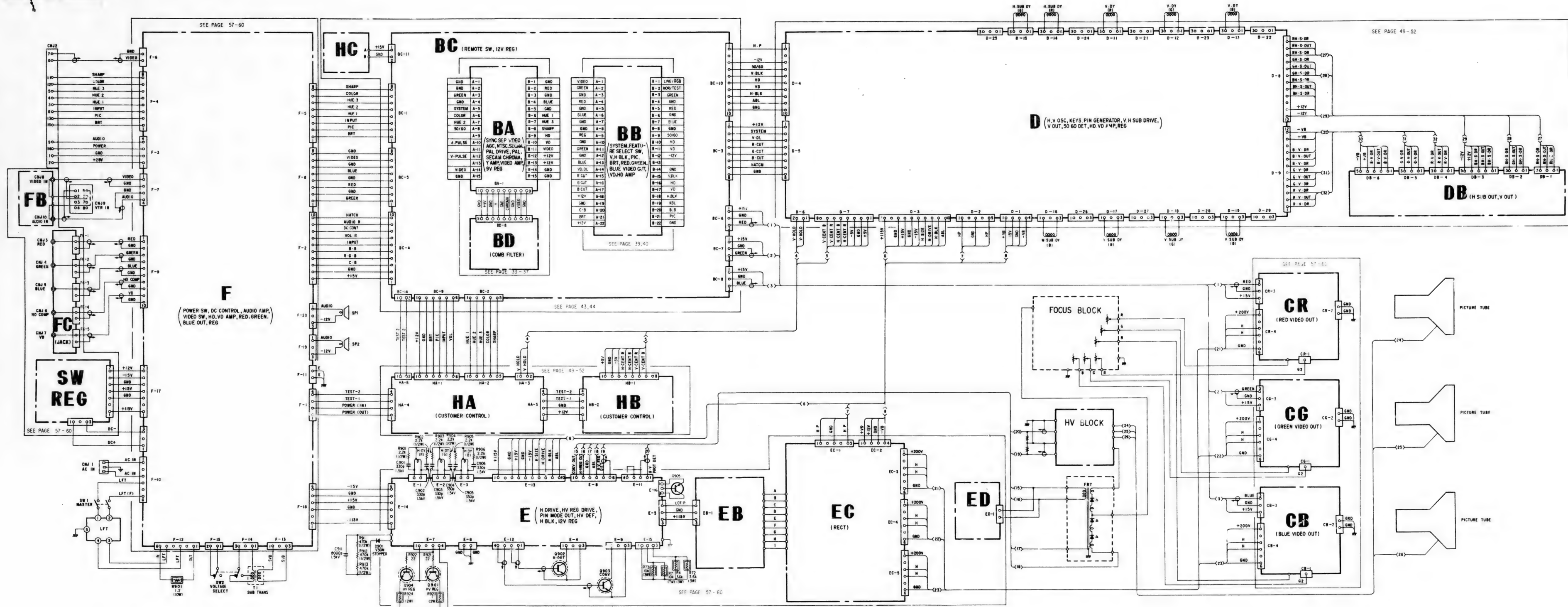
4.2. CIRCUIT BOARDS LOCATION (1/2)



• CIRCUIT BOARDS LOCATION (2/2)



4-3. FRAME SCHEMATIC DIAGRAM



4.4. SCHEMATIC DIAGRAM

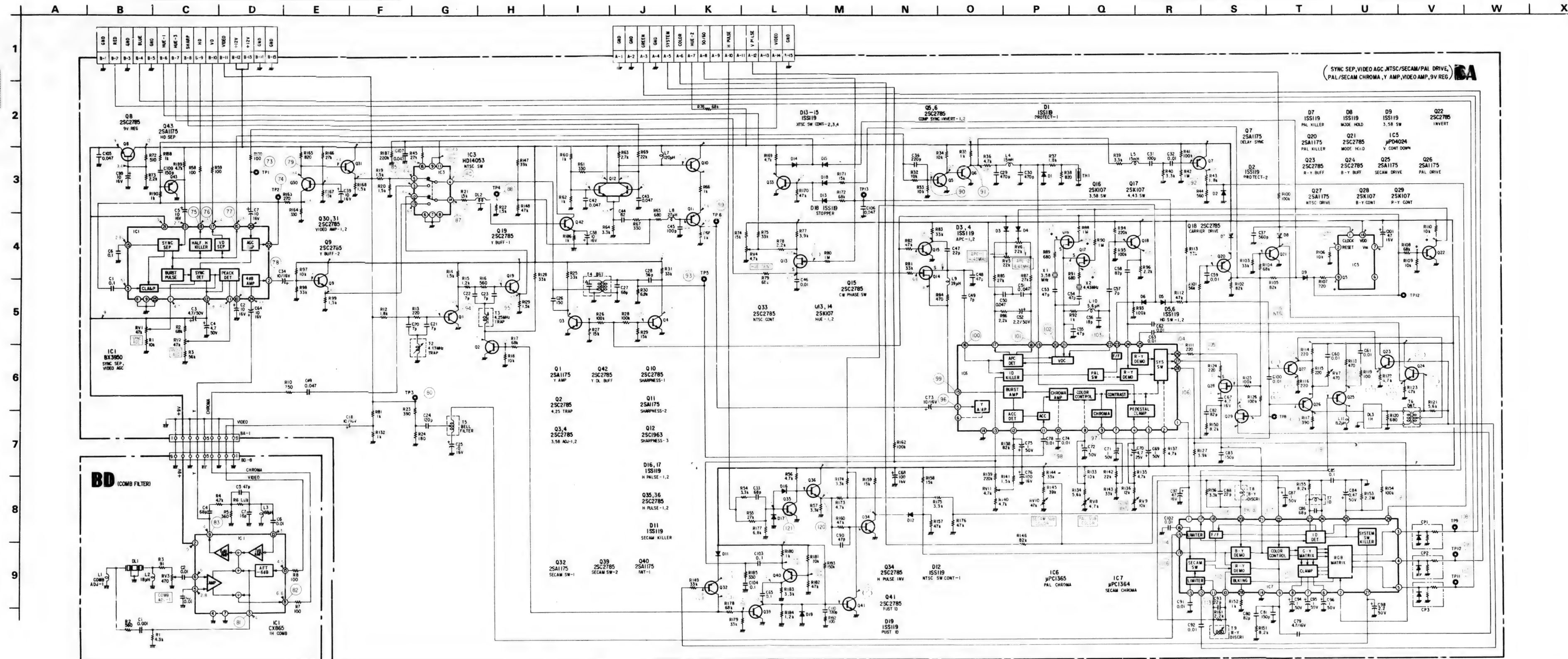
Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 V or less are not indicated except for electrolytics.
 - All resistors are in ohms, $\frac{1}{2}$ W unless otherwise noted (and D board resistors are $\frac{1}{4}$ W).
 - k: 1000 Ω , M: 1000 k Ω .
 - \square : nonflammable resistor.
 - Δ : internal component.
 - \square : panel designation.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - The components identified by \boxtimes in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.
 - When replacing components identified by \boxtimes , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by \boxtimes and repeat the adjustment until the specified value is achieved. (Refer to R11, 12, 13, R21, 22 and R37, 38 adjustment on page 19-22.)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (\boxtimes)	Adjustment (\boxtimes)
Q5, Q6, Q7, Q10, Q11, Q901, Q904, D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R651	R11, 12, 13, R21, 22 and R37, 38 adjustment
E board complete, FOCUS PACK	

- All voltages are in V.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 M Ω digital multimeter.
- Readings are taken with a color-bar signal input.
- : B+ bus.
- - -: B- bus.
- Voltage variations may be noted due to normal production tolerances.
- \square : adjustment for repair.
- No mark: PAL mode
- < >: NTSC 4.43 mode
- < >: NTSC 3.58 mode
- (): SECAM mode
- If the part marked * is replaced, the hold down adjustment should be made.



Voltage table of IC6

Mode	PAL	SECAM	NTSC 3.58	NTSC 4.43
Pin				
1	12	12	12	12
2	11.8	11.8	11.8	11.8
3	8.5	8.5	8.5	8.5
4	8.5	8.5	8.5	8.5
5	2.8	2.8	2.8	2.8
6	2	2.1	2.2	2.2
7	7.4	7.4	7.4	7.4
8	5.4	5.4	5.4	5.4
9	9.5	11.2	9.5	9.5
10	2	2	2	2
11	1.3	1.3	1.3	1.3
12	9.2	9.4	9.1	9.3
13	6.1	8.1	6.1	6.1
14	0	0	0	0
15	8	8	8	8
16	4.4	4.4	4.4	4.4
17	7.7	7.8	7.9	7.8
18	7.7	7.8	8	7.8
19	0.2	0.2	0.3	0.3
20	9.3	9.3	9.3	9.3
21	3.3	3.3	3.3	3.3
22	3.3	3.3	3.3	3.3
23	0.6	0.6	0.2	0.2
24	2.8	2.8	2.8	2.8
25	2.8	2.8	2.8	2.8
26	4.1	4.1	4.1	4.1
27	4.2	4.2	4.2	4.2
28	10	10	10	10

Voltage table of IC7

Mode	PAL	SECAM	NTSC 3.58	NTSC 4.43
Pin				
1	12	12	12	12
2	10	10	10	10
3	3	3.3	2.7	2.6
4	2.9	2.6	2.6	2.6
5	2.9	2.6	2.6	2.6
6	1.6	1.6	1.6	1.6
7	1.2	1.2	1.2	1.2
8	1.6	1.6	1.6	1.6
9	9.5	9.5	9.5	9.5
10	2.3	2.3	2.3	2.3
11	2.3	2.3	2.3	2.3
12	2.3	2.3	2.3	2.3
13	2.3	2.3	2.3	2.3
14	0	0	0	0
15	2.3	2.3	2.3	2.3
16	2.3	2.3	2.3	2.3
17	11	8.5	11	11
18	0.5	0.5	0.5	0.5
19	7.3	7.3	7.3	7.3
20	2.3	2.3	2.3	2.3
21	9.5	9.5	9.5	9.5
22	6.9	6.9	6.9	6.9
23	2.3	2.3	2.3	2.3
24	2.3	2.3	2.3	2.3
25	6.2	8.3	6.2	6.2
26	0.2	0.2	0.2	0.2
27	11.8	10.8	11.8	11.8
28	0	0	0	0

4-5. PRINTED WIRING BOARD — Conductor Side —

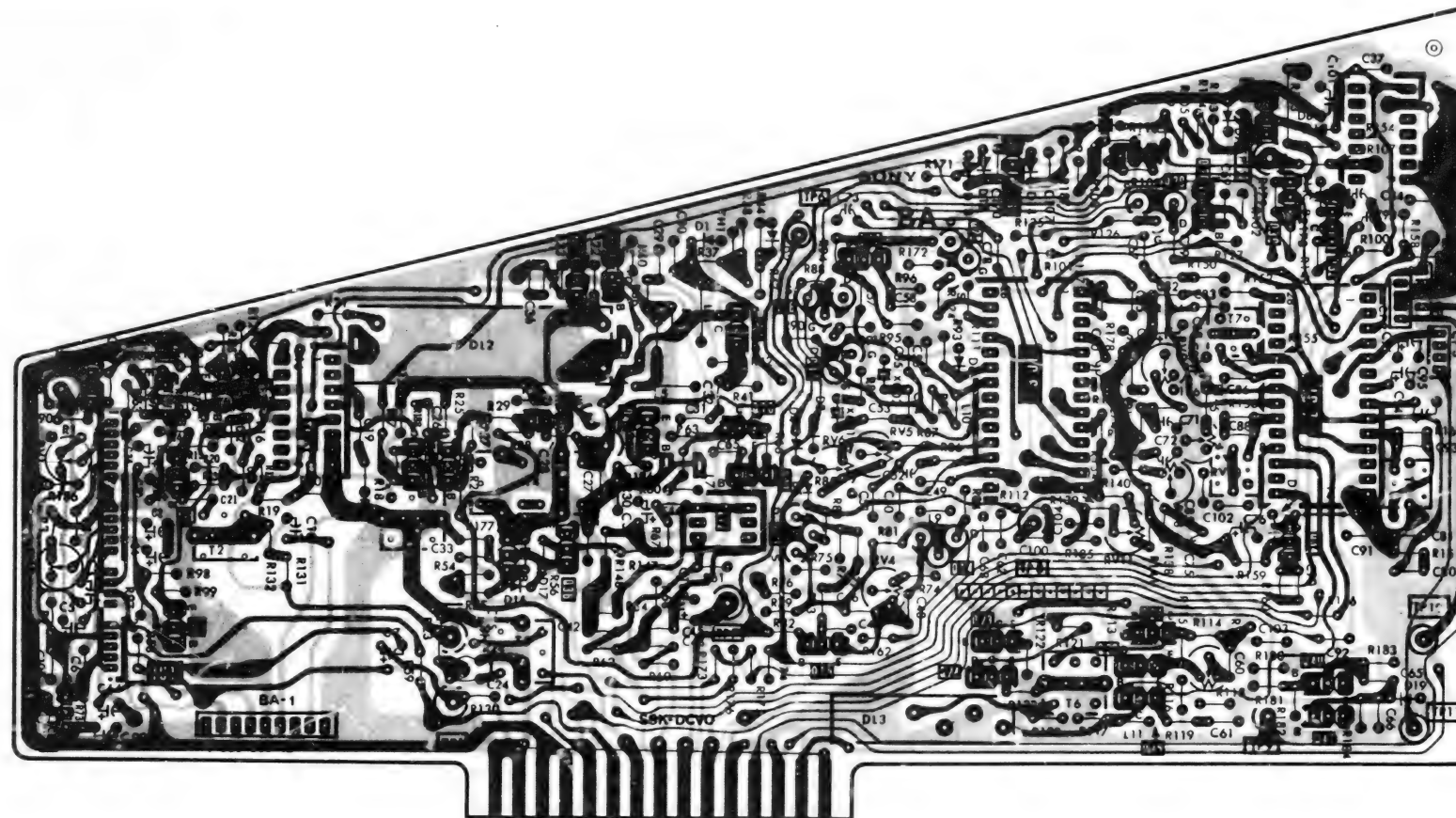
BA

[SYNC SEP VIDEO AGC, NTSC, SECAM, PAL DRIVE,
PAL, SECAM CHROMA, Y AMP, VIDEO AMP,
9 V REG]

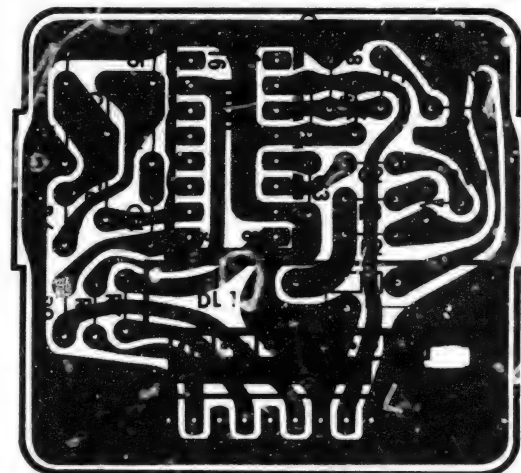
BD

[1H COMB]

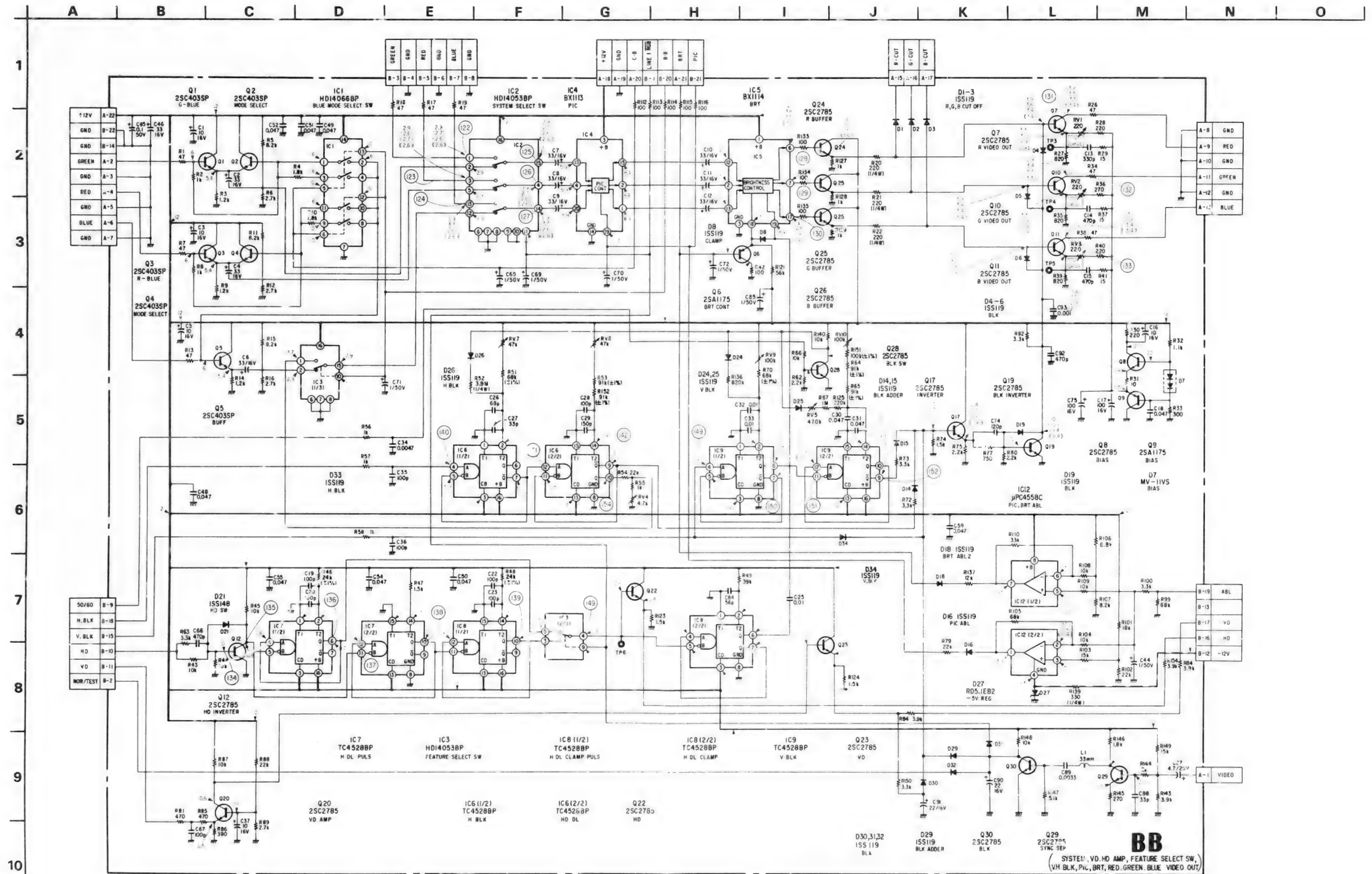
— BA Board —



— BD Board —



IC, Q	D	ADJ	TP
21	9 7 8		
22 IC5	15 13 18 14		12
33	11		
29 20 39			
32	1 2		6
18 28			
5 6			
16			
7			
40 17	6	RV9	
30 31 19			2
IC6			4
IC3 4 42 10	3 4	RV10	5
2 3		RV1 RV5	
1 11	5	RV6 RV8	
			8
12		RV2 RV11	
IC1 13 14 34	12 17		
35 36	16	RV4	7
			10
9 27			3
15 23			
26		RV7	
24 40			
8 25	19		1
41			11
			9
IC, Q	D	ADJ	TP



Bb

SYSTEM. FEATURE SELECT SW, V.H BLK, PIC, BRT,
RED. GREEN. BLUE VIDEO OUT. VD.HD AMP

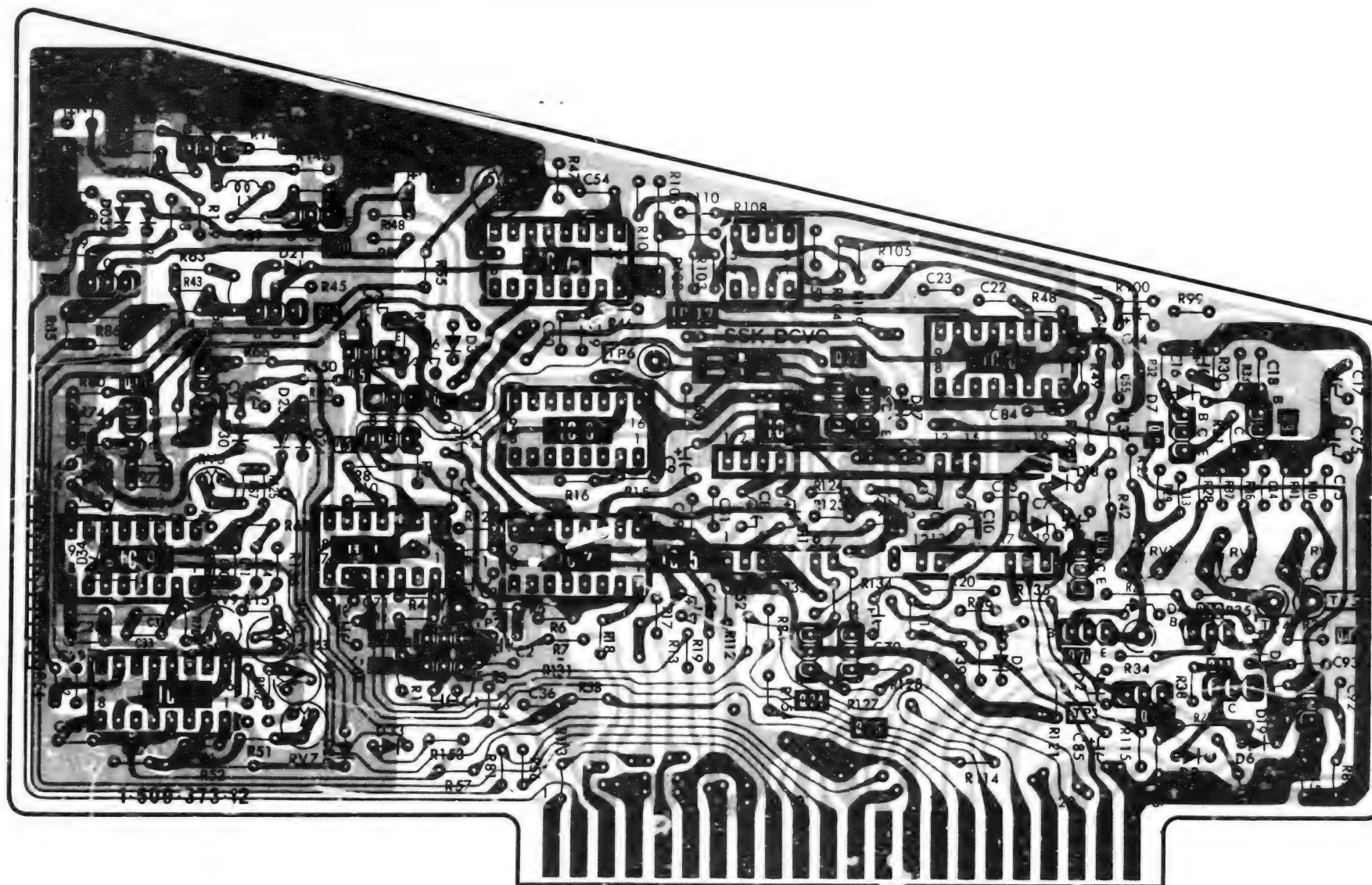
VPH-722Q/1020Q

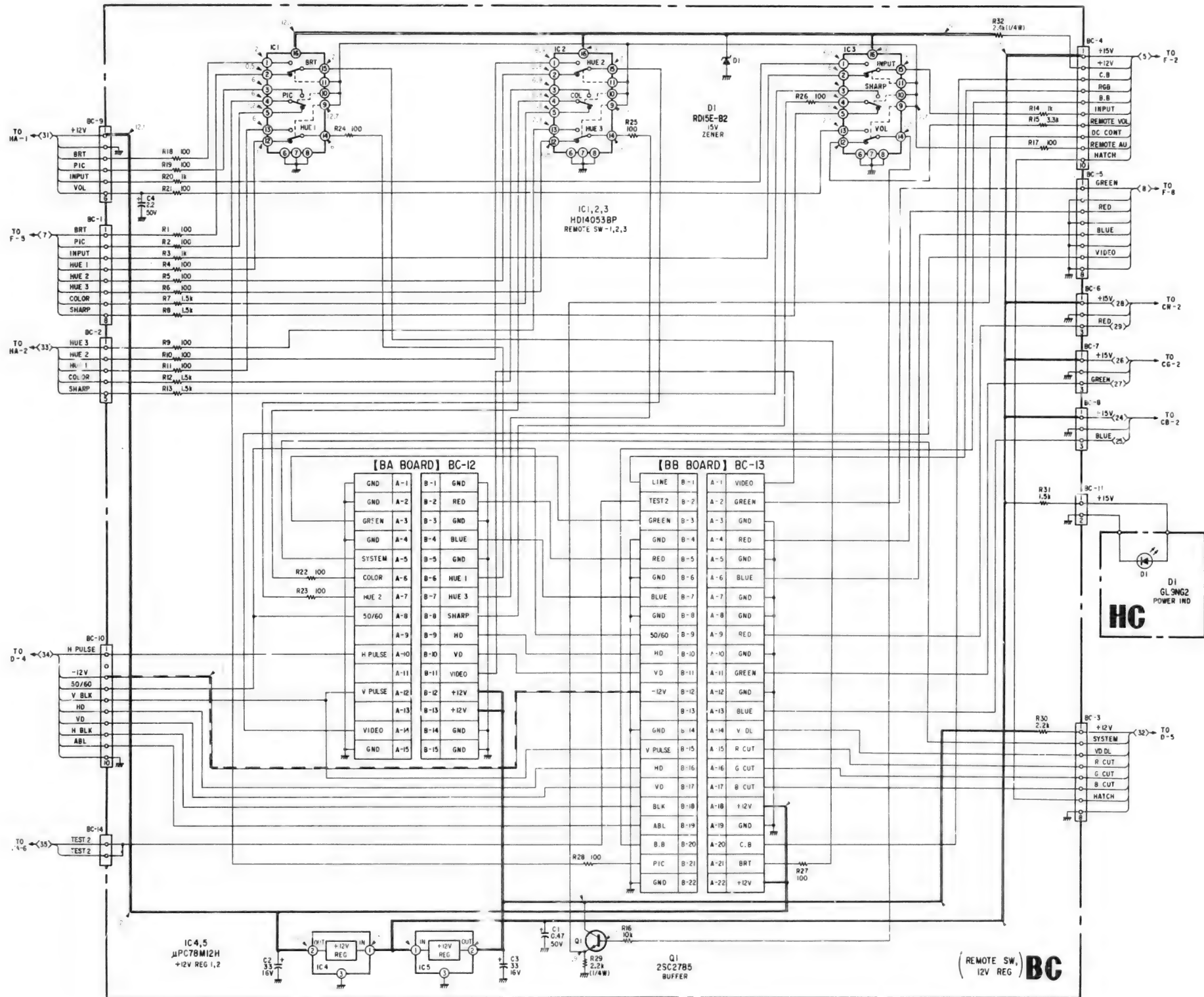
VPH-722Q/1020Q

A B C D E F G H I J K L M N O

- B2 BOARD -

Q, IC	20	17 IC9	29 IC6	12	30	5	4 3 IC1	2 1	IC7 IC3 IC2	IC12	23,22	IC4 IC5	IC8	6 7	8	10 11	9 19	Q, IC	
D	14 15	32,29 34		30	21 25,24	26		31			27		1	8 18	16 2	4	7 3	5 6 19	D
ADJ			RV5 RV9		RV10 RV8,RV7				RV4							RV1	RV2	RV3	ADJ
TP								2		6						3		4 5	TP





Bc

[REMOTE SW, 12 V REG]

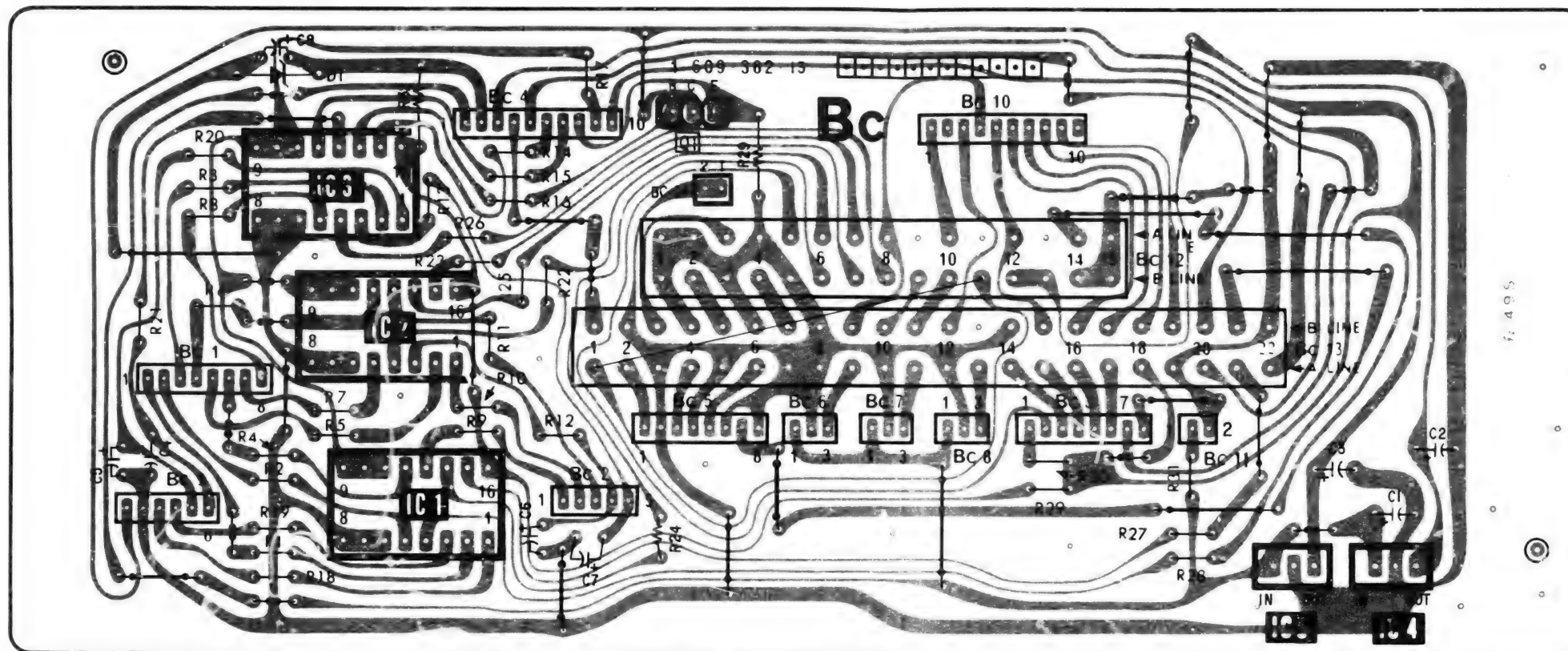
Hc

VPH-722Q/1020Q

VPH-722Q/1020Q

A B C D E F G H I J K L M N O

- BC BOARD -



- HC Board -



4-6. SEMICONDUCTORS

BX1113
BX1114
BX1222
BX3950-1



(Marking side view)

BX1120
BX1121



(Marking side view)

CX7916
NJM4558L
μPC393C
μPC4558C



(Top view)

CX7948



CX865
HD14052BP
HD14053BP
HD14538BP
TC4052BP
TC4053BP



(Top view)

CX894

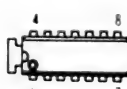


HD14066BP
TC4024BP
μPC339C
μPD4024BC



(Top view)

LA2600



M5214L
μPC1037H



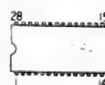
M5218L



μPC1277H

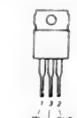


μPC1364C2
μPC1365C



(Top view)

μPC7808H
μPC7812H
μPC78M12H



μPC7908H
μPC7912H



COMMON IN OUT

μPC78L12



2SA1015
2SA733
2SC1363
2SC1364
2SC1815
2SC945



2SA1026



2SA1175
2SA1175F
2SC2785



2SB856
2SB861
2SC1061
2SD1138
2SD478



2SC1413A



2SC1963



2SC2278



2SC2383



2SC2458
2SC403SP
2SC2603
2SC634SP



2SC2959



2SC403C



2SD669A



2SK107



1SS119
1SS120
1SS148



1SS133
EM12
ERD28-08S
RD15E-B2
RD5.1E-B2
RD5.6E-B2
RD5.6E-L3



CR02AM-4



EQA01-05T1



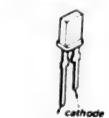
ERB12-02RK
GP08D



ERC26-15S



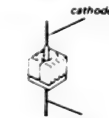
GL9NG2



MV11VS



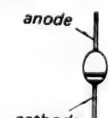
S15H



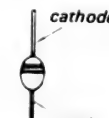
SEL2110R
TLG124A

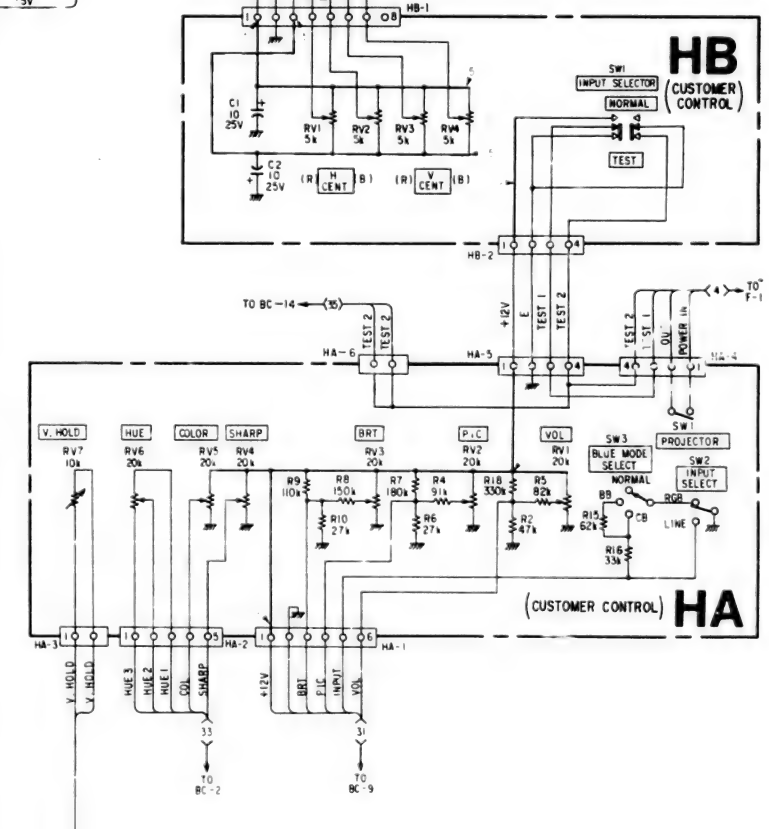
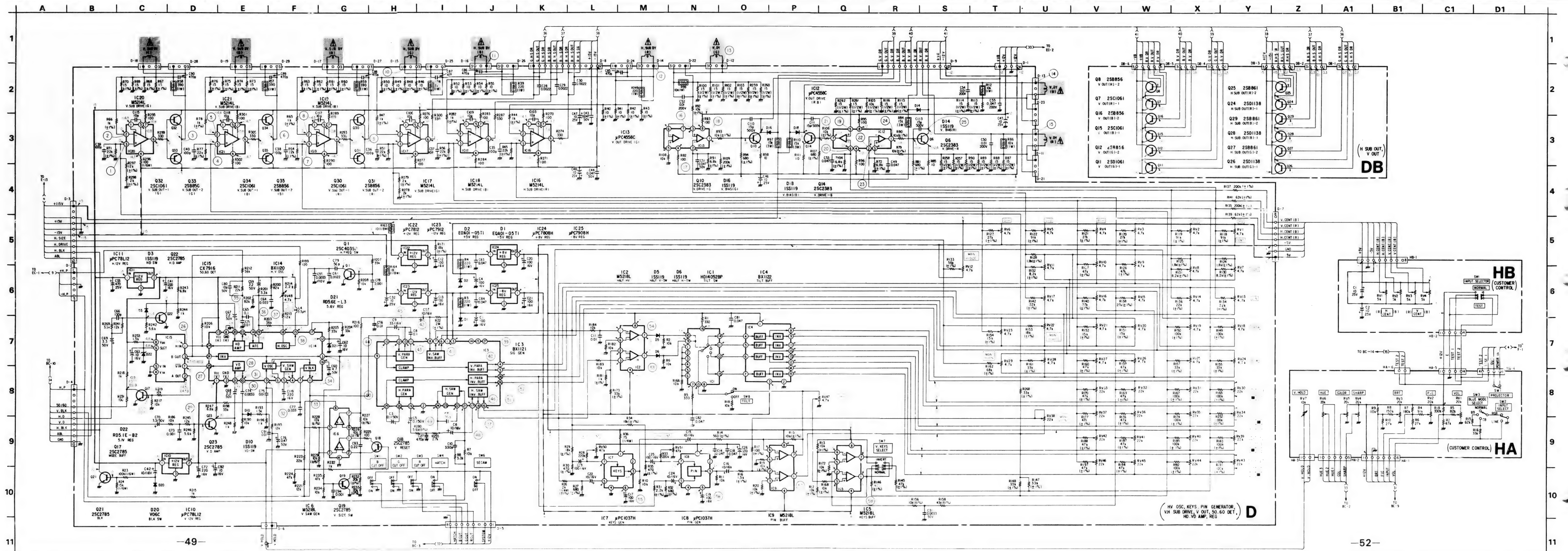


SIB01-02
V06C



U05E
V11N

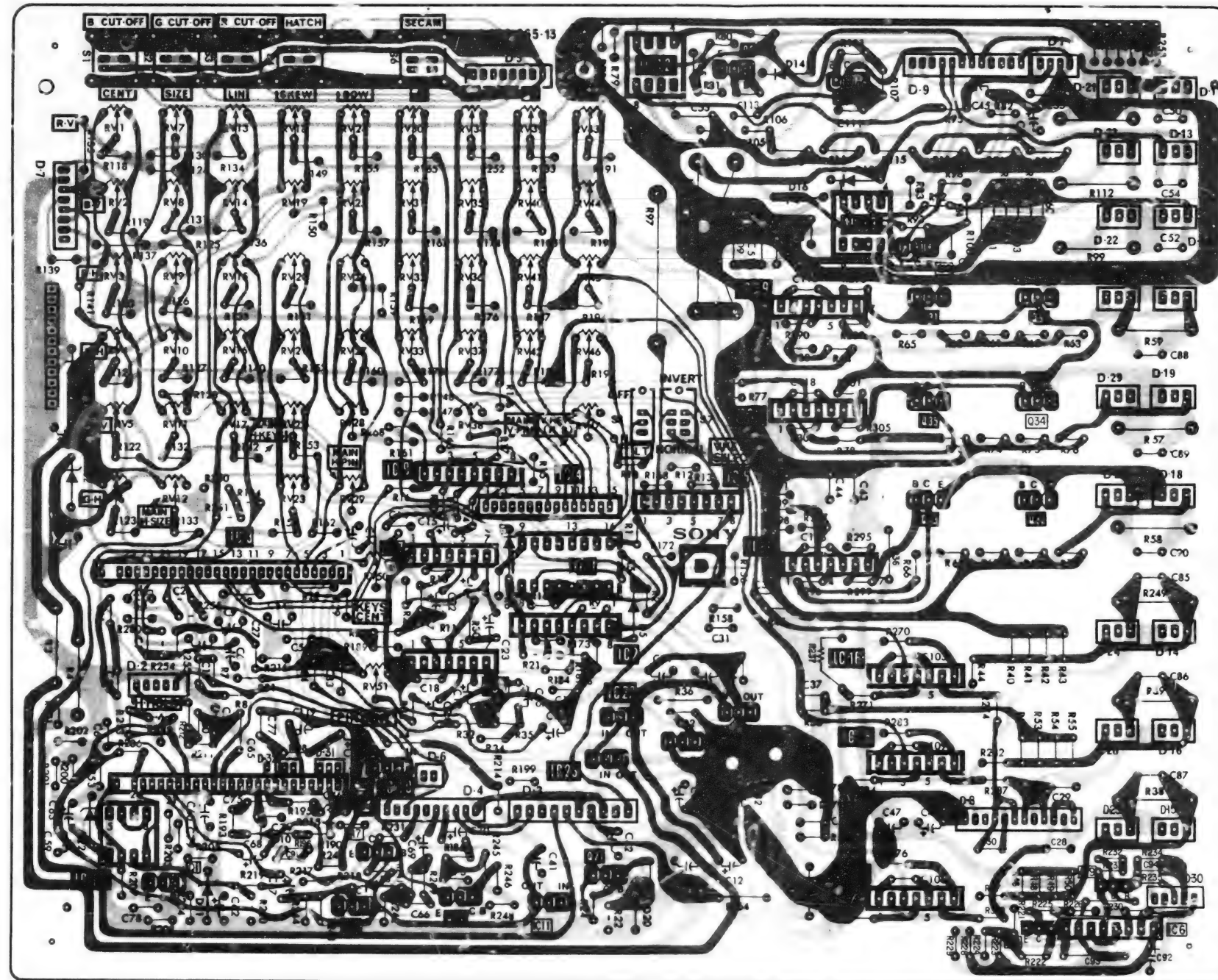




D [H.V. OSC, KEYS. PIN GENERATOR, V.H SUB DRIVE, V OUT,]
[50.60 DET, HD.VD AMP, REG]

A B C D E F G H I J K L M N O F

— D Board —



IC, Q	D	ADJ
IC12 6 14	14	RV1, RV7, RV3, RV8, RV24 RV30, RV34, RV39, RV43
IC13	18 16	RV2, RV8, RV14, RV19, RV25 RV31, RV35, RV40, RV44
31 30 IC19		RV3, RV9, RV15, RV20, RV26 RV32, RV36, RV41, RV45
IC21 35 34		RV4, RV10, RV16, RV21, RV27 RV33, RV37, RV42, RV46
IC9 IC4, IC5, 33, 32	1 2	RV5, RV11, RV17, RV22, RV28 RV38, RV47
IC7 IC1 IC20 IC3	6	RV6, RV12, RV23, RV29
IC2	5	RV50
IC8 IC16		RV51
IC22 IC24 IC25 IC23 IC10 IC18 IC14		RV49
IC15 17 21 1 IC17 19 22 23 IC11 18 IC6	22 10 3 21 20	
IC, Q	D	ADJ

HA

[CUSTOMER CONTROL]

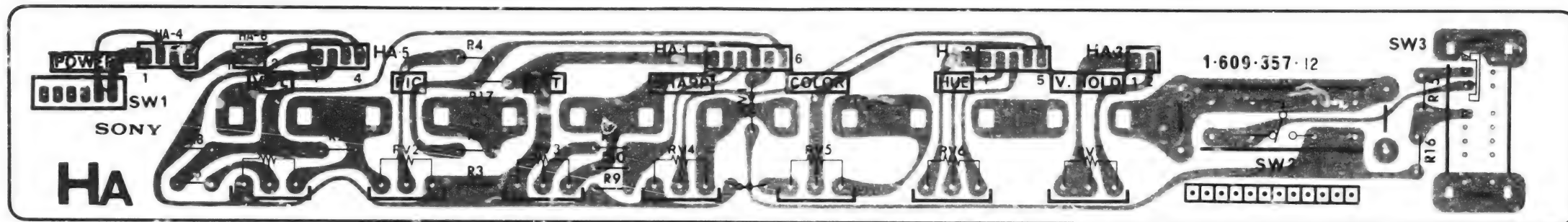
DB

[H SUB OUT, V OUT]

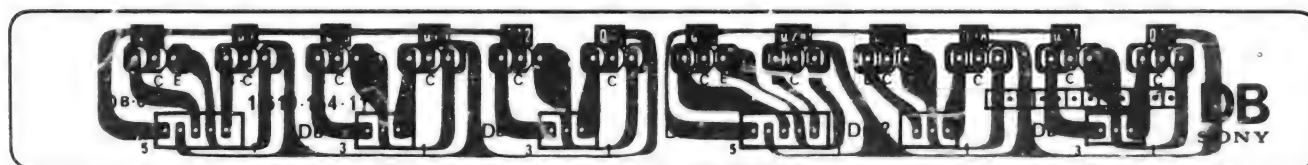
HB

[CUSTOMER CONTROL]

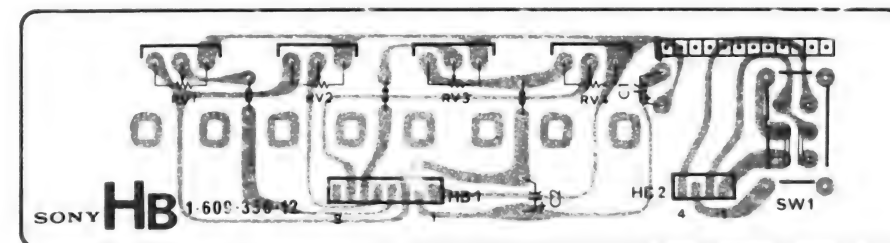
— HA Board —

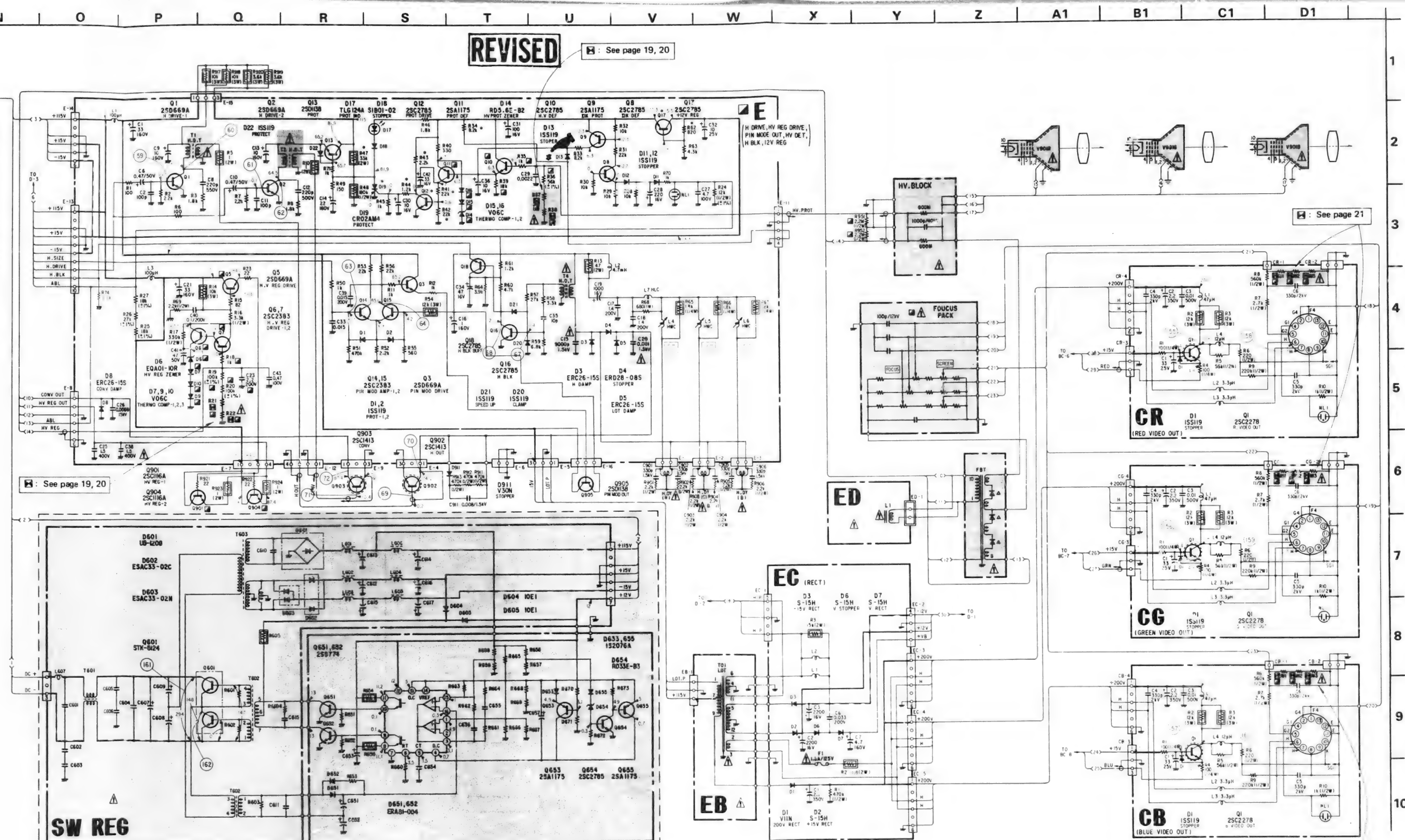
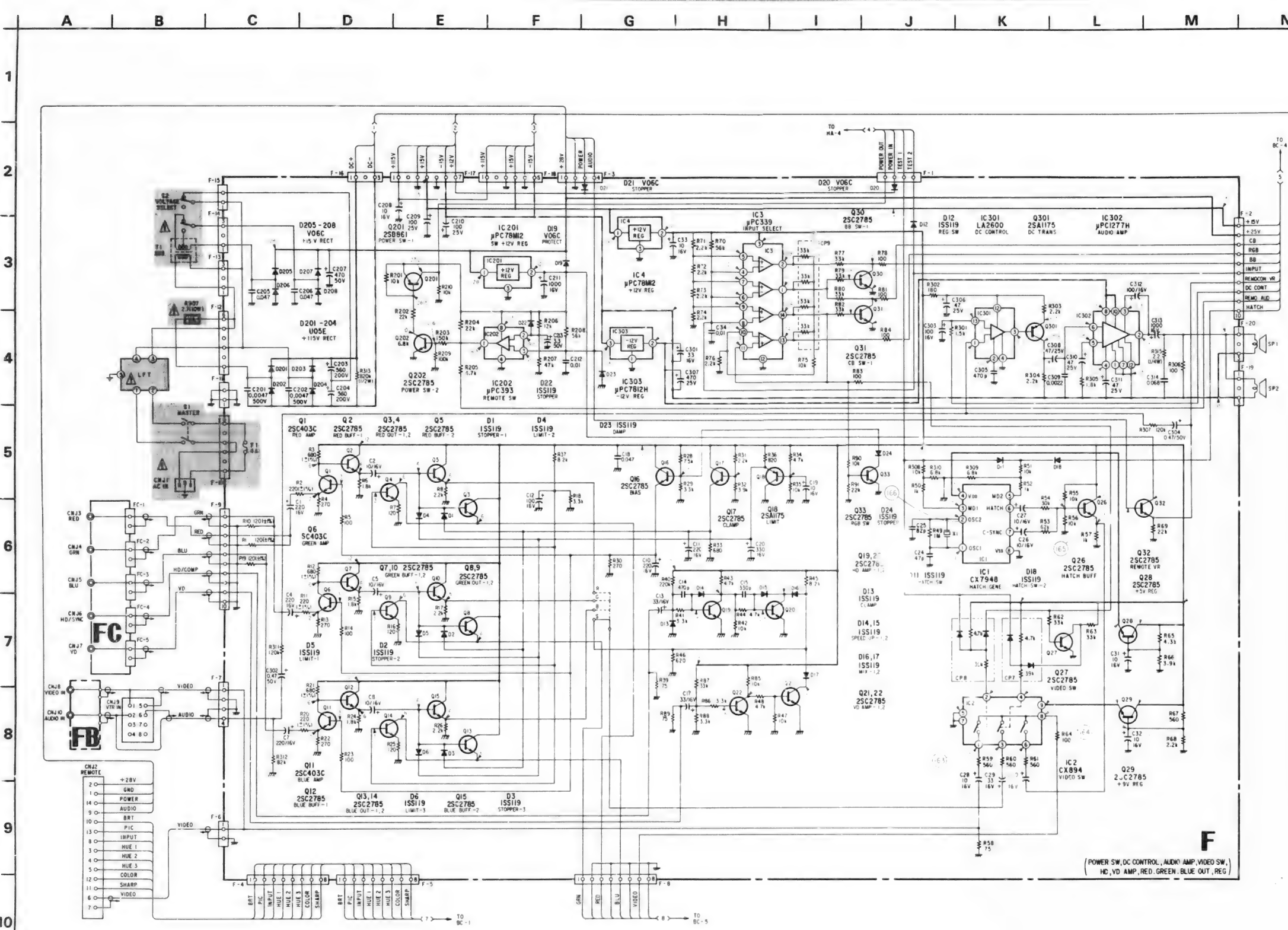


— DB Board —



— HB Board —





SEE ADDITIONAL INFORMATION

VPH-722Q/1020Q

VPH-722Q/1020Q

F

[POWER SW, DC CONTROL, AUDIO AMP, VIDEO SW, HD.VD AMP, RED.GREEN.BLUE OUT, REG]

FC

[JACK]

E

[H DRIVE, HV REG DRIVE, PIN MODE OUT, HV DEF, H BLK, 12 V REG]

EC

[RECT]

EB

FB

ED

A B C D E F G H I J K L M N O

Note:

- The components identified by **F** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.
 - When replacing components identified by **F**, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by **F** and repeat the adjustment until the specified value is achieved. (Refer to R11, 12, 13, R21, 22 and R37, 38 adjustment on page 19-22.)
- When replacing the part in below table, be sure to perform the related adjustment.

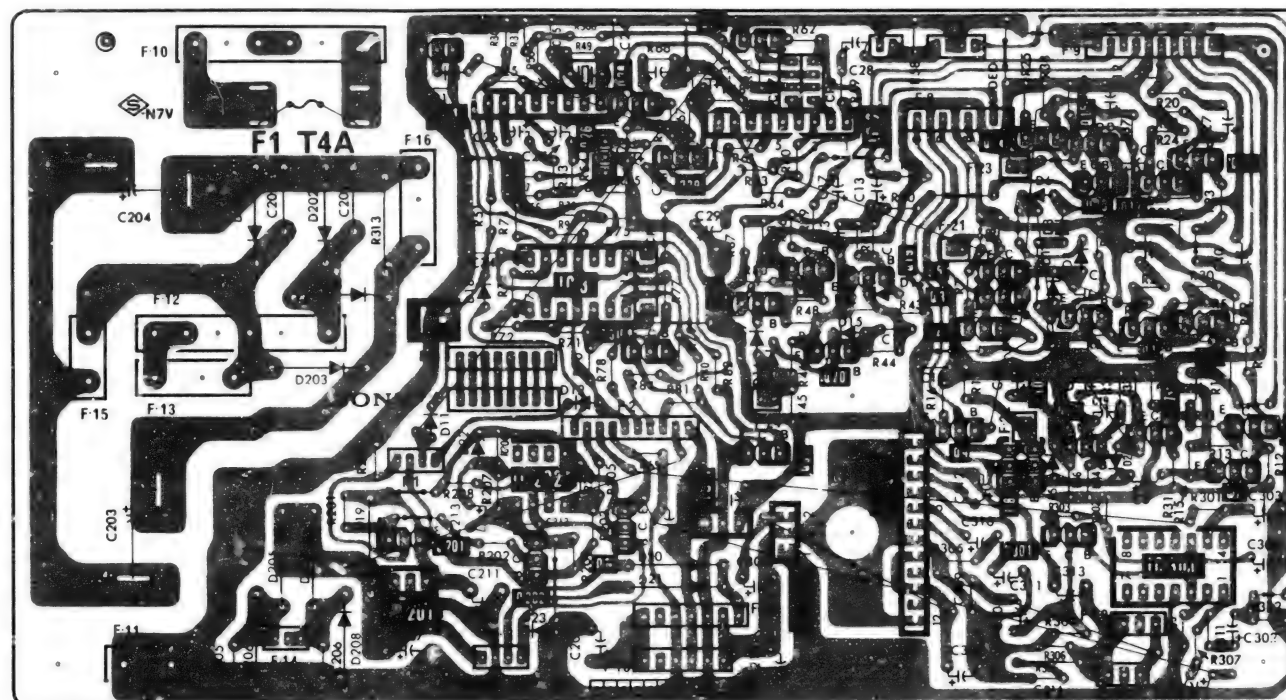
Part replaced (F)	Adjustment (F)
Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK	R11, 12, 13, R21, 22 and R37, 38 adjustment

Note: The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

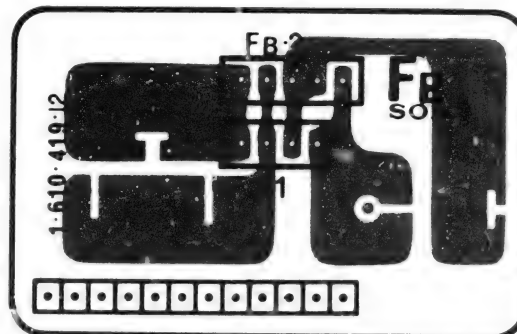
- If the part marked ***** is replaced, the hold down adjustment should be made.

- F Board -

Q IC				33 IC3		IC1	26	28	29		27 IC2					14	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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- FB Board -

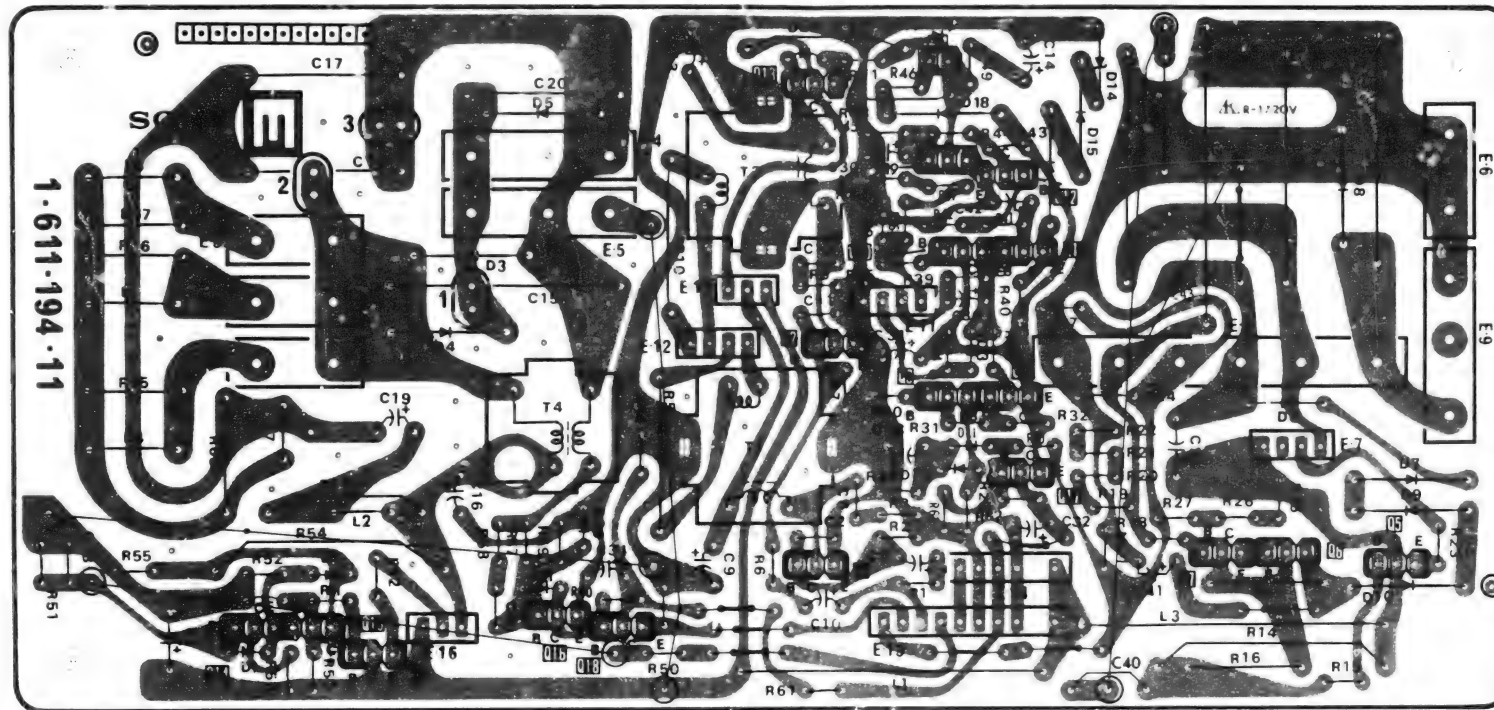


- FC Board -



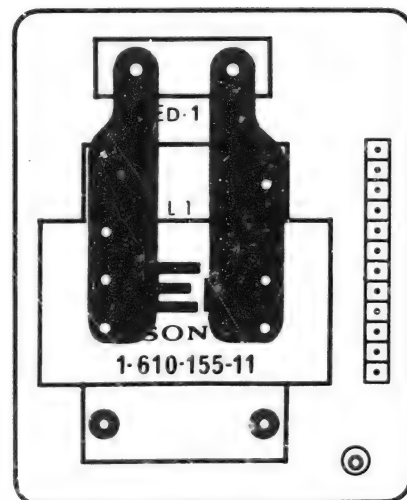
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— E Board —

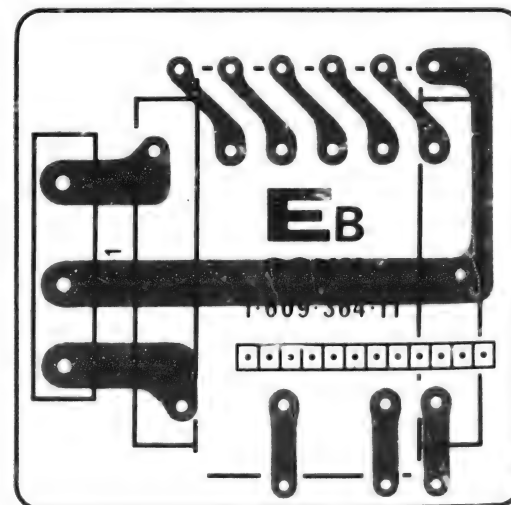


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Q	D

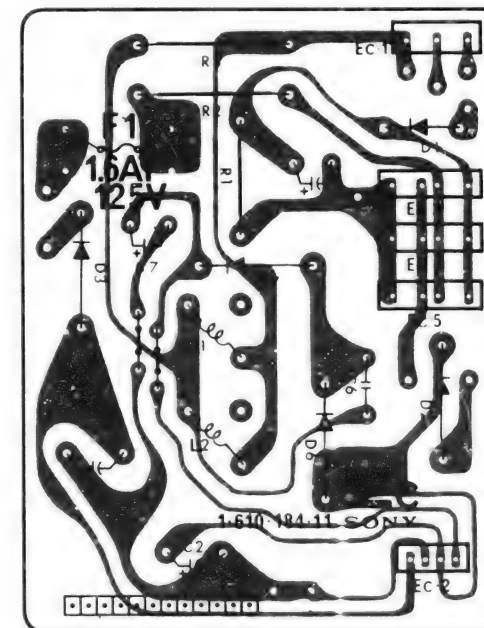
— ED Board —



— EB Board —

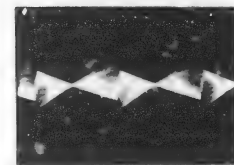


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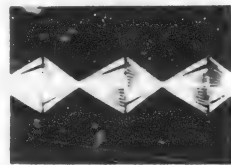


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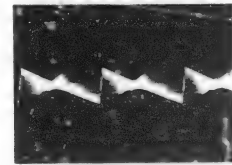
4.7. WAVEFORM



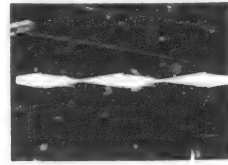
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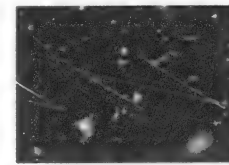
(3) 5.6Vp-p (V)



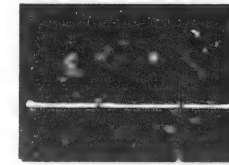
(4) 5 0.76Vp-p (V)



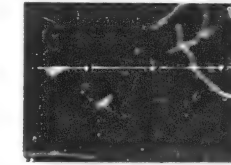
(6) 24Vp-p (V)



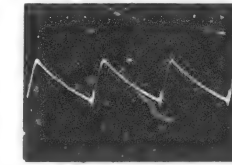
(33) 2.5Vp-p (V)



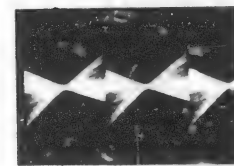
(34) 12Vp-p (V)



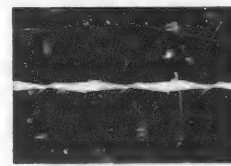
(35) 1.6Vp-p (H)



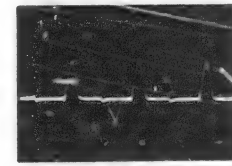
(36) 1Vp-p (H)



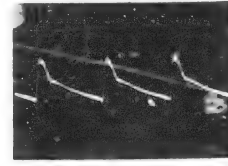
(7) 8 0.72Vp-p (V)



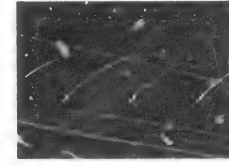
(9) 26Vp-p (V)



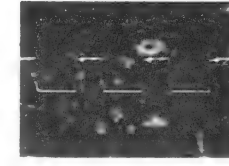
(10) 2Vp-p (H)



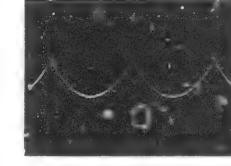
(11) 9.6Vp-p (H)



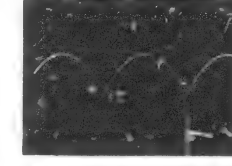
(37) 1.4Vp-p (H)



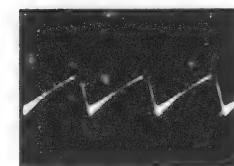
(38) 3.3Vp-p (H)



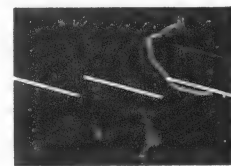
(39) 2.9Vp-p (V)



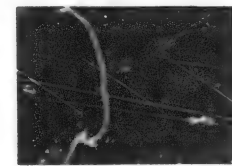
(40) 2.9Vp-p (V)



(12) 6Vp-p (H)



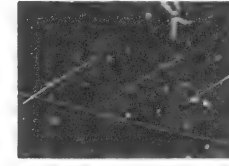
(13) 14, 15 34Vp-p (V)



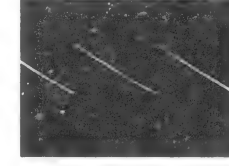
(16) 17 1.4Vp-p (V)



(18) 2Vp-p (V)



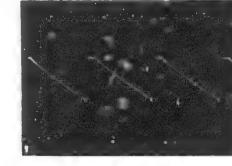
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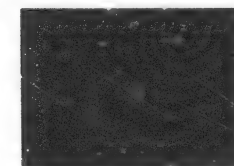
(42) 43 2.5Vp-p (V)



(44) 45 2.9Vp-p (V)



(46) 3.2Vp-p (H)



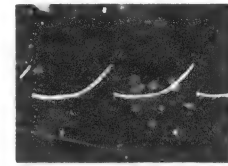
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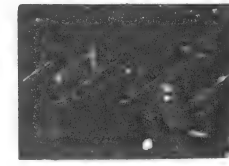
(21) 2Vp-p (V)



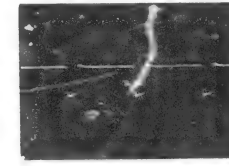
(22) 23 1.4Vp-p (V)



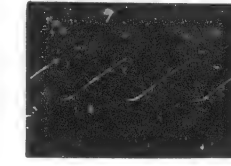
(24) 2Vp-p (V)



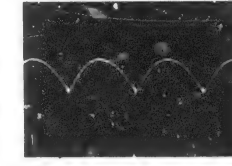
(47) 3Vp-p (H)



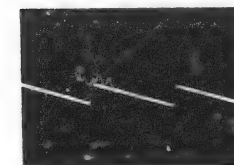
(48) 1.6Vp-p (H)



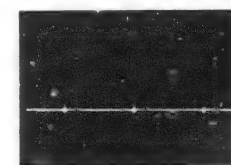
(49) 3Vp-p (H)



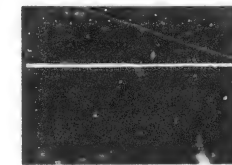
(50) 51 3.2Vp-p (H)



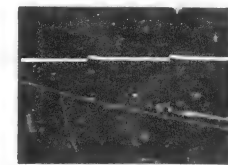
(25) 34Vp-p (V)



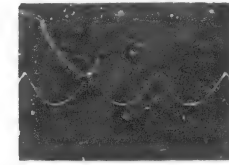
(26) 6Vp-p (H)



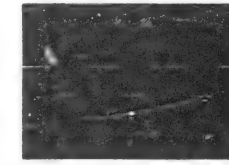
(27) 5Vp-p (V)



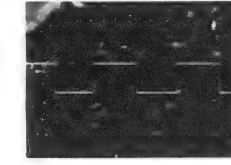
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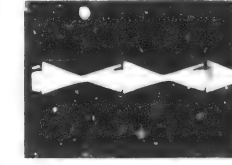
(52) 3Vp-p (H)



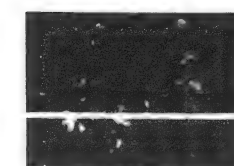
(53) 14Vp-p (H)



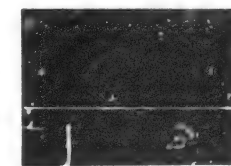
(54) 14Vp-p (V)



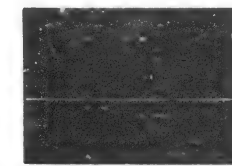
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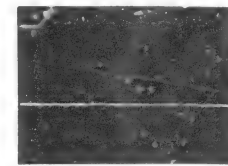
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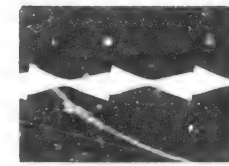
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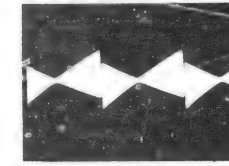
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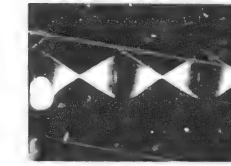
(32) 11Vp-p (V)



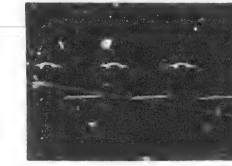
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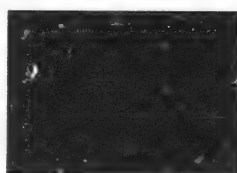
(57) 3Vp-p (H)



(58) 3.2Vp-p (V)



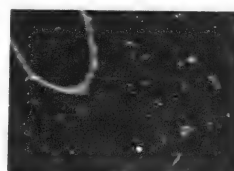
(59) 1.8Vp-p (H)



60 125Vp-p (H)



61 1.8Vp-p (H)



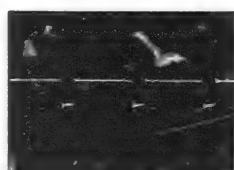
62 125Vp-p (H)



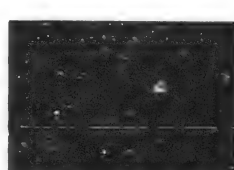
63 5.3Vp-p (V)



64 27Vp-p (V)



67 1.3Vp-p (H)



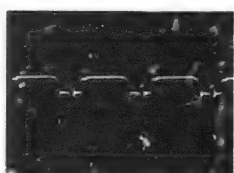
68 13Vp-p (H)



69 15Vp-p (H)



70 800Vp-p (H)



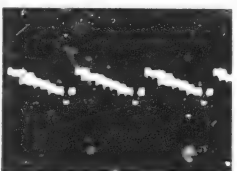
71 15Vp-p (H)



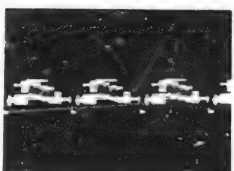
72 900Vp-p (H)



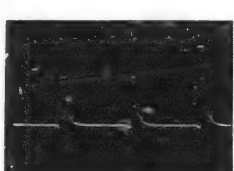
73 74 0.9Vp-p (H) PAL



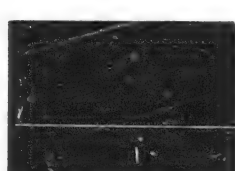
73 74 0.9Vp-p (H) SECAM



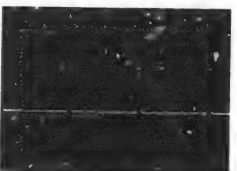
73 74 0.8Vp-p (H) NTSC3.58 NTSC4.43



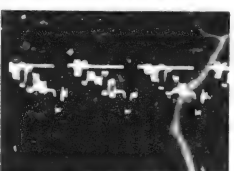
75 4.6Vp-p (H)



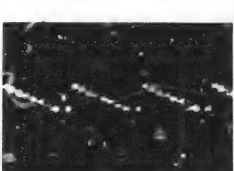
76 4.4Vp-p (H)



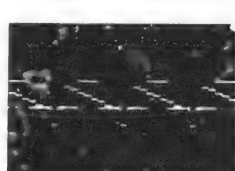
77 4.4Vp-p (H)



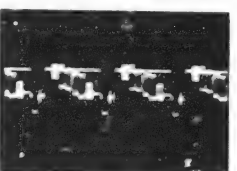
78 2.3Vp-p (H) PAL



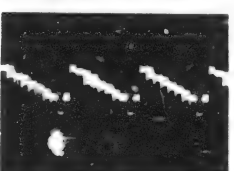
78 2.3Vp-p (H) SECAM



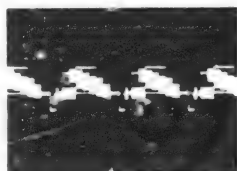
78 2Vp-p (H) NTSC3.58 NTSC4.43



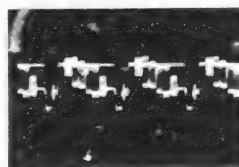
79 2.3Vp-p (H) PAL



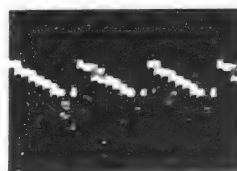
79 2.3Vp-p (H) SECAM



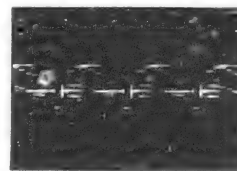
79 2Vp-p (H) NTSC3.58
NTSC4.43



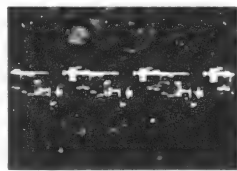
80 2.5Vp-p (H) PAL



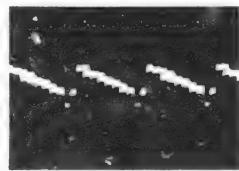
80 2.4Vp-p (H) SECAM



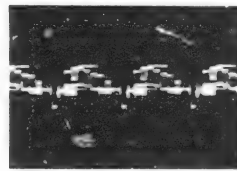
80 2Vp-p (H) NTSC3.58
NTSC4.43



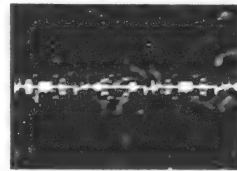
81 0.7Vp-p (H) PAL



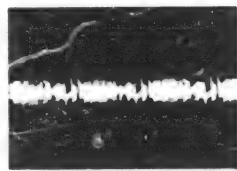
81 0.7Vp-p (H) SECAM



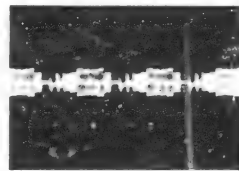
81 0.56Vp-p (H) NTSC3.58
0.6Vp-p (H) NTSC4.43



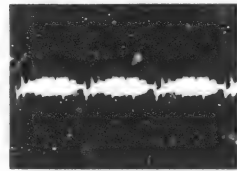
82 0.6Vp-p (H) PAL



82 0.6Vp-p (H) SECAM



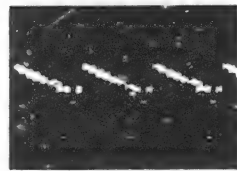
82 0.48Vp-p (H)
NTSC3.58



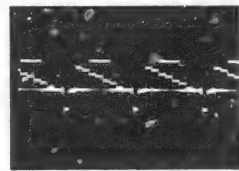
82 0.36Vp-p (H) NTSC4.43



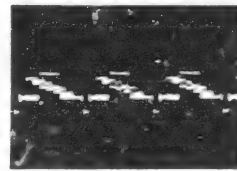
83 1.4Vp-p (H) PAL



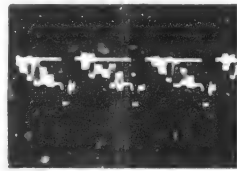
83 1.4Vp-p (H) SECAM



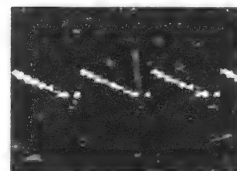
83 1.2Vp-p (H) NTSC3.58



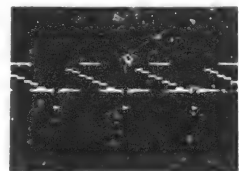
83 1.2Vp-p (H) NTSC4.43



84 2.5Vp-p (H) PAL



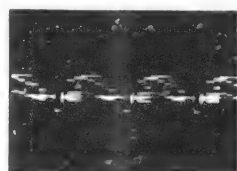
84 2.3Vp-p (H) SECAM



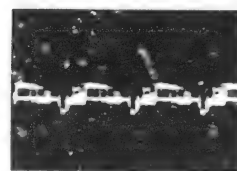
84 2Vp-p (H) NTSC3.58
NTSC4.43



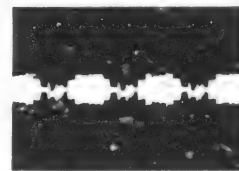
85 0.36Vp-p (H) PAL



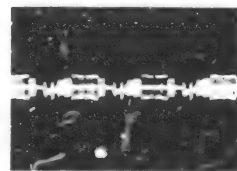
85 1Vp-p (H) NTSC3.58



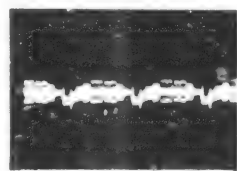
86 0.24Vp-p (H) NTSC4.43



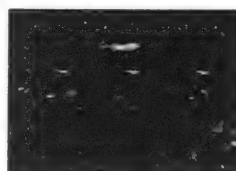
86 0.24Vp-p (H) PAL



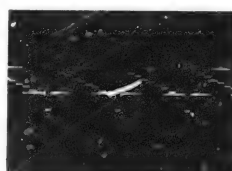
86 0.24Vp-p (H) NTSC3.58



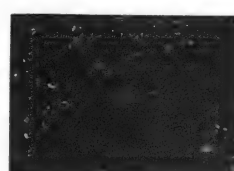
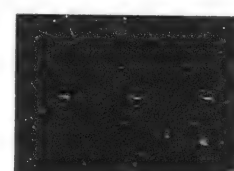
86 0.14Vp-p (H)
NTSC4.43



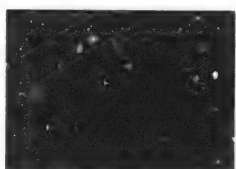
87 2Vp-p (H) PAL



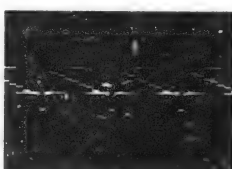
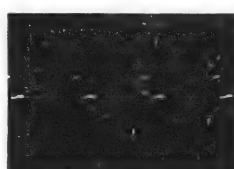
87 2Vp-p (H) SECAM


87 2Vp-p (H) NTSC3.58
NTSC4.43


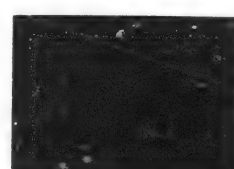
88 1Vp-p (H) PAL



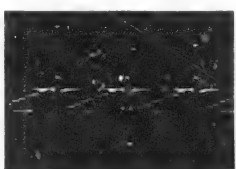
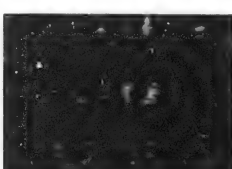
88 1Vp-p (H) SECAM


88 1Vp-p (H) NTSC3.58
NTSC4.43


89 0.8Vp-p (H) PAL



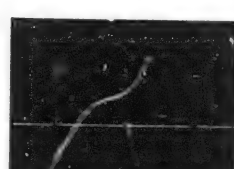
89 0.8Vp-p (H) SECAM


89 0.8Vp-p (H) NTSC3.58
NTSC4.43


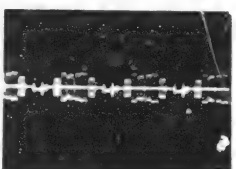
90 2Vp-p (H)



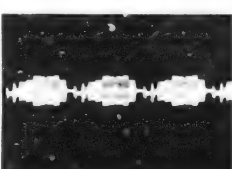
91 11Vp-p (H)



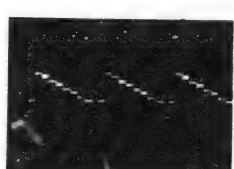
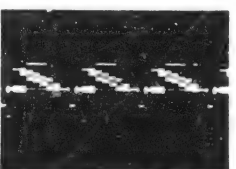
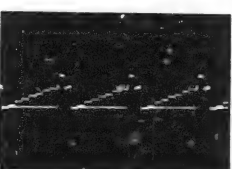
92 12Vp-p (H)



93 0.46Vp-p (H) PAL


93 0.42Vp-p (H) NTSC3.58
0.2Vp-p (H) NTSC4.43

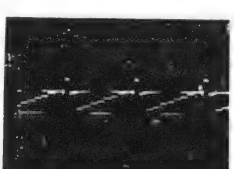
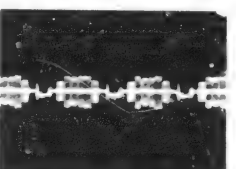

94 95 2Vp-p (H) PAL


94 95 2Vp-p (H)
SECAM

94 95 2Vp-p (H)
NTSC3.58
NTSC4.43


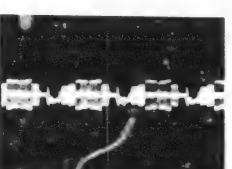
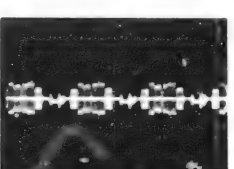
96 0.9Vp-p (H) PAL



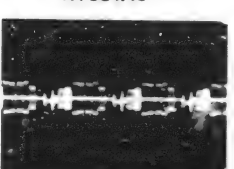
96 0.8Vp-p (H) SECAM

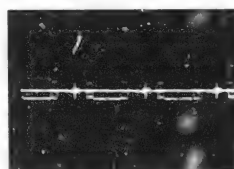

96 0.8Vp-p (H)
NTSC3.58
NTSC4.43


97 0.32Vp-p (H) PAL

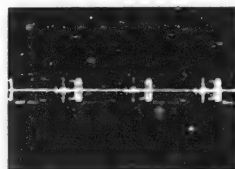

97 0.21Vp-p (H) NTSC3.58
0.17Vp-p (H) NTSC4.43


98 0.48Vp-p (H) PAL

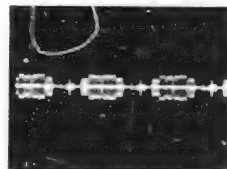

98 0.41Vp-p (H)
NTSC3.58
0.2Vp-p (H)
NTSC4.43



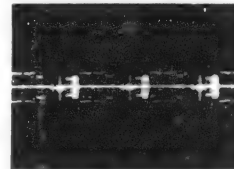
99 2.4Vp-p (H) PAL



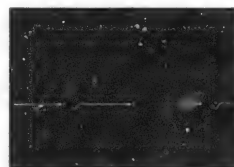
99 1.8Vp-p (H) NTSC3.58
1.5Vp-p (H) NTSC4.43



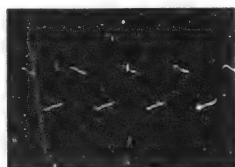
100 1.2Vp-p (H) PAL



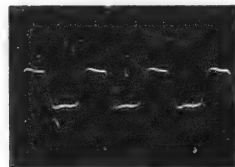
100 1Vp-p (H) NTSC3.58
0.8Vp-p (H) NTSC4.43



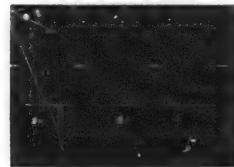
101 2.9Vp-p (H)



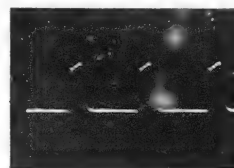
102 2Vp-p (4.43MHz) PAL



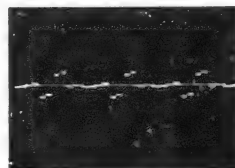
102 2Vp-p (3.58MHz) NTSC
2Vp-p (4.43MHz) NTSC4.43



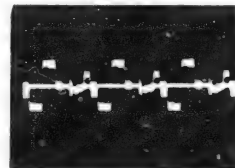
103 2.7Vp-p (H) PAL,
SECAM



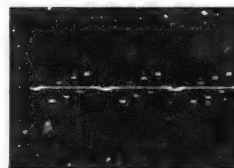
103 0.5Vp-p (H) NTSC3.58
NTSC4.43



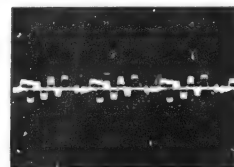
104 0.7Vp-p (H) PAL



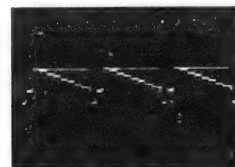
104 0.48Vp-p (H) NTSC3.58
0.44Vp-p (H) NTSC4.43



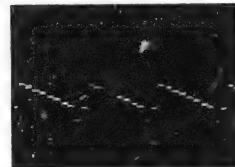
105 0.75Vp-p (H) PAL



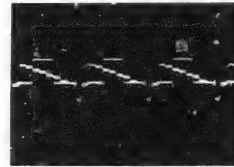
105 0.6Vp-p (H) NTSC3.58
0.56Vp-p (H) NTSC4.43



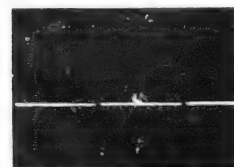
106 0.5Vp-p (H) PAL



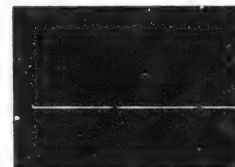
106 0.6Vp-p (H) SECAM



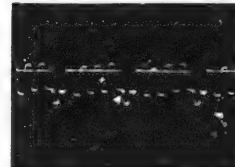
106 0.54Vp-p (H)
NTSC3.58
NTSC4.43



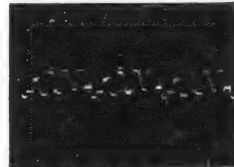
107 0.56Vp-p (H) PAL
NTSC3.58
NTSC4.43



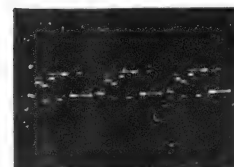
107 10Vp-p (H) SECAM



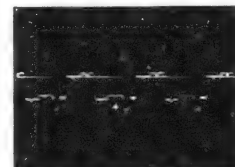
108 2.8Vp-p (H) PAL



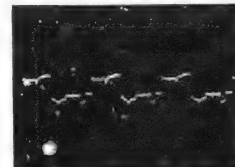
108 3.6Vp-p (H)
SECAM



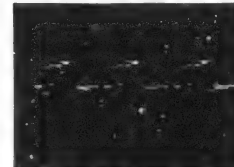
108 2.4Vp-p (H) NTSC3.58
NTSC4.43



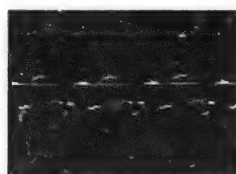
109 2.6Vp-p (H) PAL



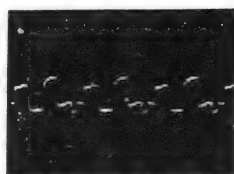
109 3Vp-p (H) SECAM



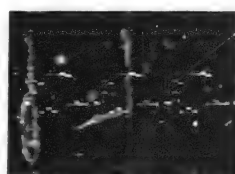
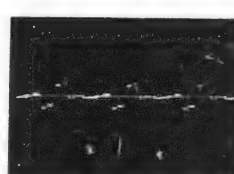
109 2.4Vp-p (H)
NTSC3.58
NTSC4.43



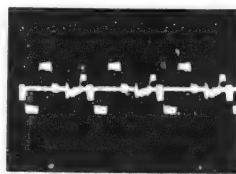
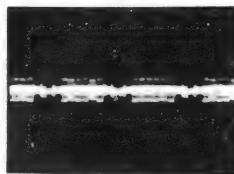
110 2.8Vp-p (H) PAL



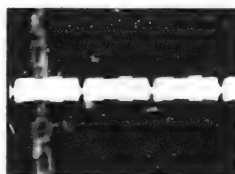
110 3.2Vp-p (H) SECAM


110 2.4Vp-p (H) NTSC3.58
NTSC4.43


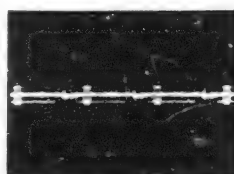
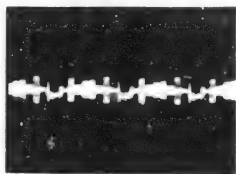
111 0.7Vp-p (H) PAL


111 0.44Vp-p (H) NTSC3.58
0.4Vp-p (H) NTSC4.43


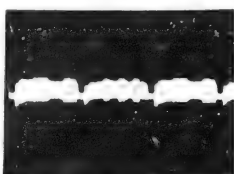
112 0.6Vp-p (H) PAL



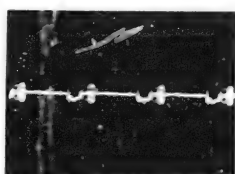
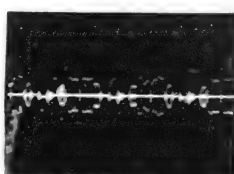
112 0.6Vp-p (H) SECAM


112 0.6Vp-p (H) NTSC3.58
NTSC4.43


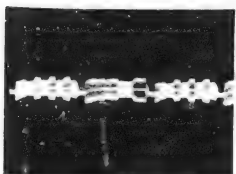
113 0.18Vp-p (H) PAL



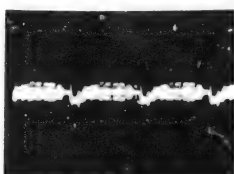
113 0.2Vp-p (H) SECAM


113 0.2Vp-p (H) NTSC3.58
NTSC4.43


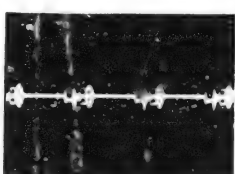
114 0.9Vp-p (H) PAL



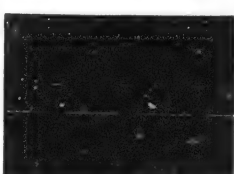
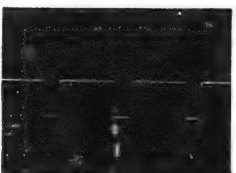
114 0.28Vp-p (H) SECAM



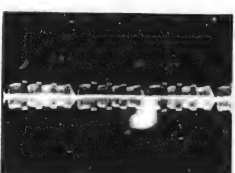
114 0.2Vp-p (H) NTSC3.58



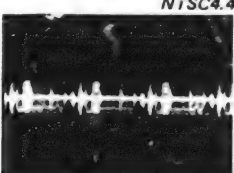
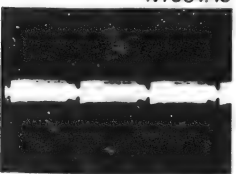
114 0.32Vp-p (H) NTSC4.43


115 2.8Vp-p (H) PAL
2.6Vp-p (H) SECAM
2.2Vp-p (H) NTSC3.58
NTSC4.43

116 9Vp-p (H) PAL
8Vp-p (H) SECAM
NTSC3.58
NTSC4.43

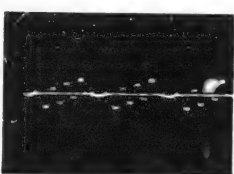

116-a 0.6Vp-p (H) PAL



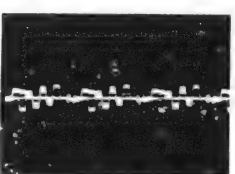
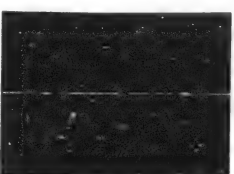
116-a 0.8Vp-p (H) SECAM


116-a 0.8Vp-p (H)
NTSC3.58


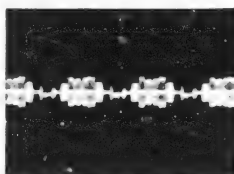
116-a 0.6Vp-p (H) NTSC4.43



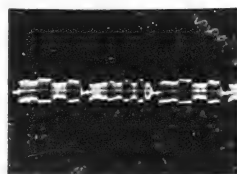
117 0.75Vp-p (H) PAL


117 0.6Vp-p (H) NTSC3.58
0.5Vp-p (H) NTSC4.43


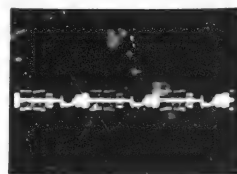
118 2.6Vp-p (H)



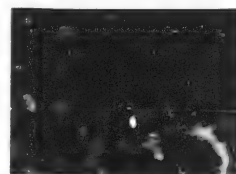
119 0.4Vp-p (H) PAL



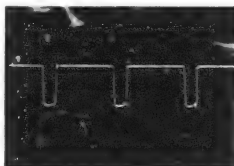
119 0.5Vp-p (H) SECAM



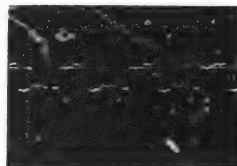
119 0.2Vp-p (H) NTSC3.58
NTSC4.43



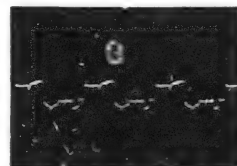
120 11'p-p (H)



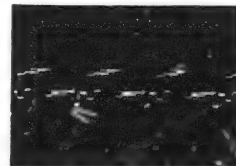
121 1.3Vp-p (H)



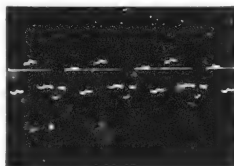
122 2.5Vp-p (H) PAL



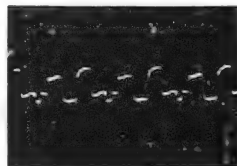
122 2.5Vp-p (H) SECAM



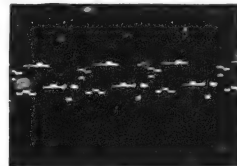
122 2.2Vp-p (H) NTSC3.58
2.4Vp-p (H) NTSC4.43



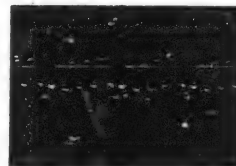
123 2.8Vp-p (H) PAL



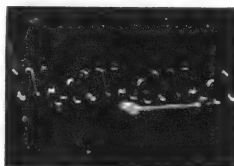
123 3Vp-p (H) SECAM



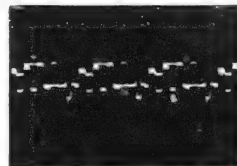
123 2.2Vp-p (H) NTSC3.58
2.3Vp-p (H) NTSC4.43



124 2.6Vp-p (H) PAL



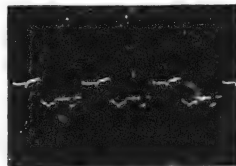
124 3.4Vp-p (H) SECAM



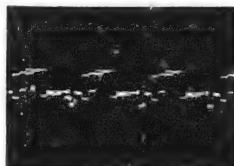
124 2.2Vp-p (H) NTSC3.58
2.4Vp-p (H) NTSC4.43



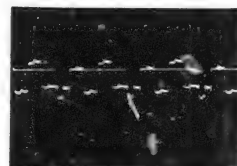
125 2.5Vp-p (H) PAL



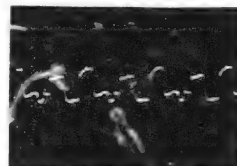
125 2.5Vp-p (H) SECAM



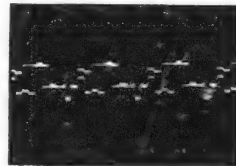
125 2.2Vp-p (H) NTSC3.58
2.4Vp-p (H) NTSC4.43



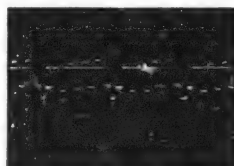
126 2.8Vp-p (H) PAL



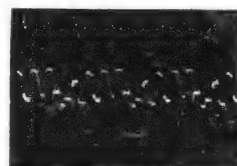
126 3Vp-p (H) SECAM



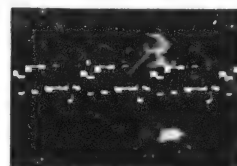
126 2.2Vp-p (H) NTSC3.58
2.3Vp-p (H) NTSC4.43



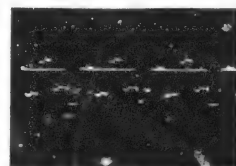
127 2.6Vp-p (H) PAL



127 3.4Vp-p (H) SECAM



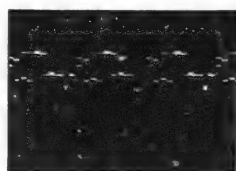
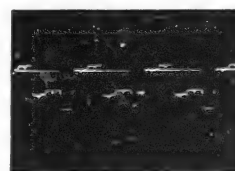
127 2.2Vp-p (H) NTSC3.58
2.4Vp-p (H) NTSC4.43



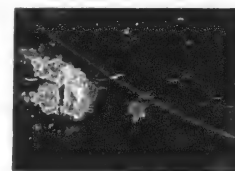
128 3.4Vp-p (H) PAL



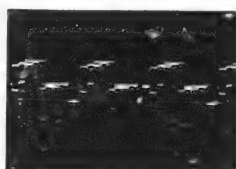
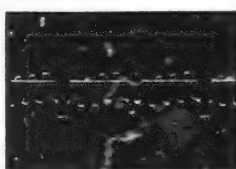
128 3.8Vp-p (H) SECAM


128 2.7Vp-p (H) NTSC3.58
NTSC4.43


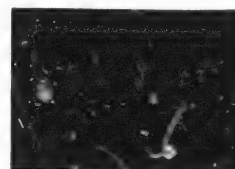
129 3Vp-p (H) PAL



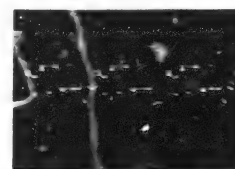
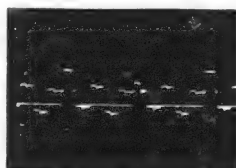
129 3Vp-p (H) SECAM


129 2.6Vp-p (H) NTSC3.58
NTSC4.43


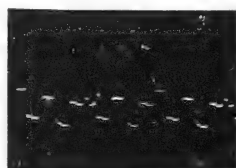
130 3.2Vp-p (H) PAL



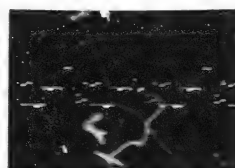
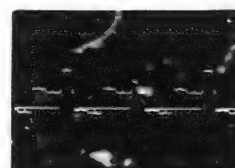
130 4.4Vp-p (H) SECAM


130 2.5Vp-p (H) NTSC3.58
NTSC4.43


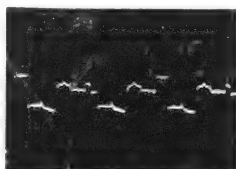
131 3.2Vp-p (H) PAL



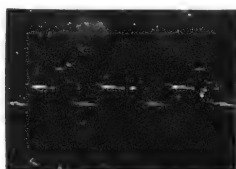
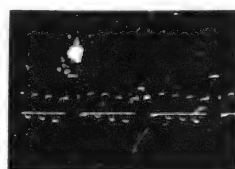
131 3.4Vp-p (H) SECAM


131 2.6Vp-p (H) NTSC3.58
NTSC4.43


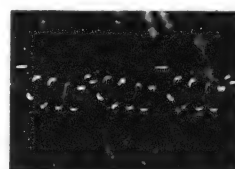
132 3.4Vp-p (H) PAL



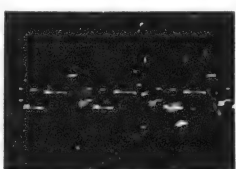
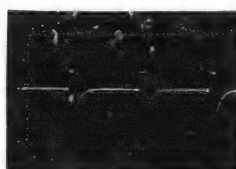
132 3.4Vp-p (H) SECAM


132 2.9Vp-p (H) NTSC3.58
NTSC4.43


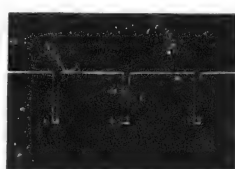
133 3.3Vp-p (H) PAL



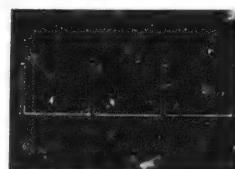
133 4Vp-p (H) SECAM


133 2.8Vp-p (H) NTSC3.58
NTSC4.43


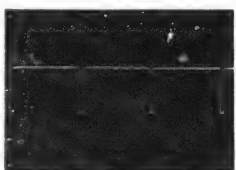
134 1.4Vp-p (H)



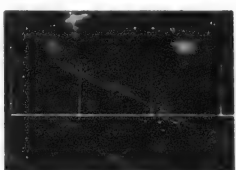
135 12Vp-p (H)



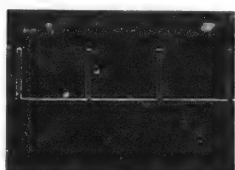
136 12Vp-p (H)



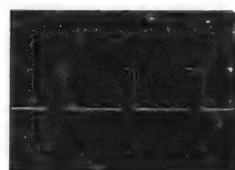
137 12Vp-p (H)



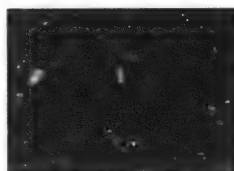
138 12Vp-p (H)



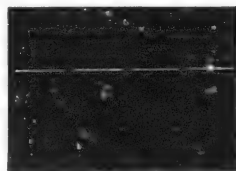
139 12Vp-p (H)



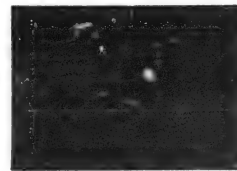
140 13Vp-p (H)



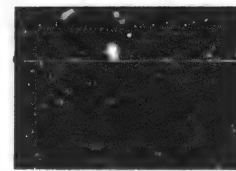
141 12Vp-p (1/2H)



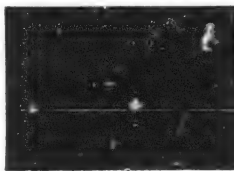
142 12Vp-p (H)



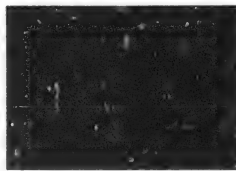
143 10Vp-p (V)



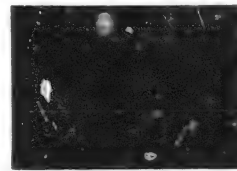
144, 145 12Vp-p (V)



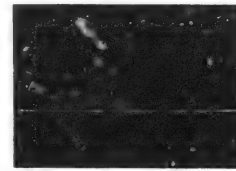
146 11Vp-p (V)



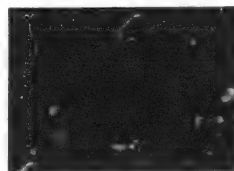
147 12Vp-p (V)



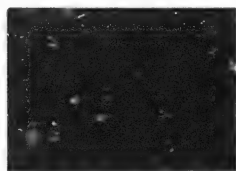
148 9.5Vp-p (V)



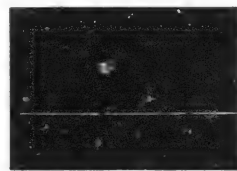
149 12Vp-p (V)



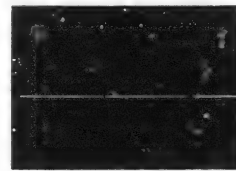
150 12Vp-p (V)



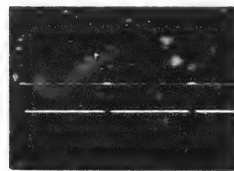
151 12Vp-p (V)



152 12Vp-p (V)



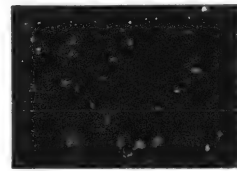
153 4.4Vp-p (V) PAL



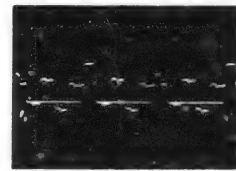
153 4.4Vp-p (V) SECAM



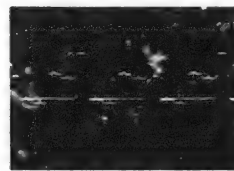
153 4.4Vp-p (V) NTSC3.58



154 11Vp-p (1/2H)



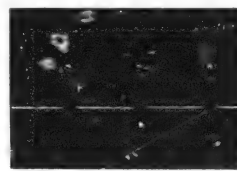
155 115Vp-p (H) PAL



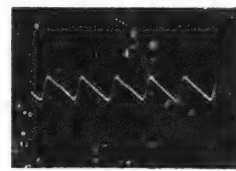
156 120Vp-p (H) PAL



157 120Vp-p (H)



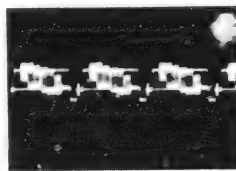
158, 159, 160 20Vp-p (H)



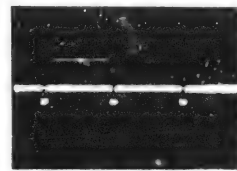
161 8Vp-p (10m Sec)



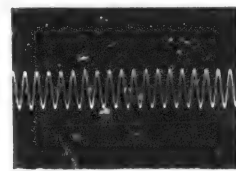
162 300Vp-p (38 μ Sec)



163, 164 0.9Vp-p (H) PAL



165 1Vp-p (H)



166 TEST 6.2Vp-p (3.58 MHz)

SECTION 5 EXPLODED VIEWS

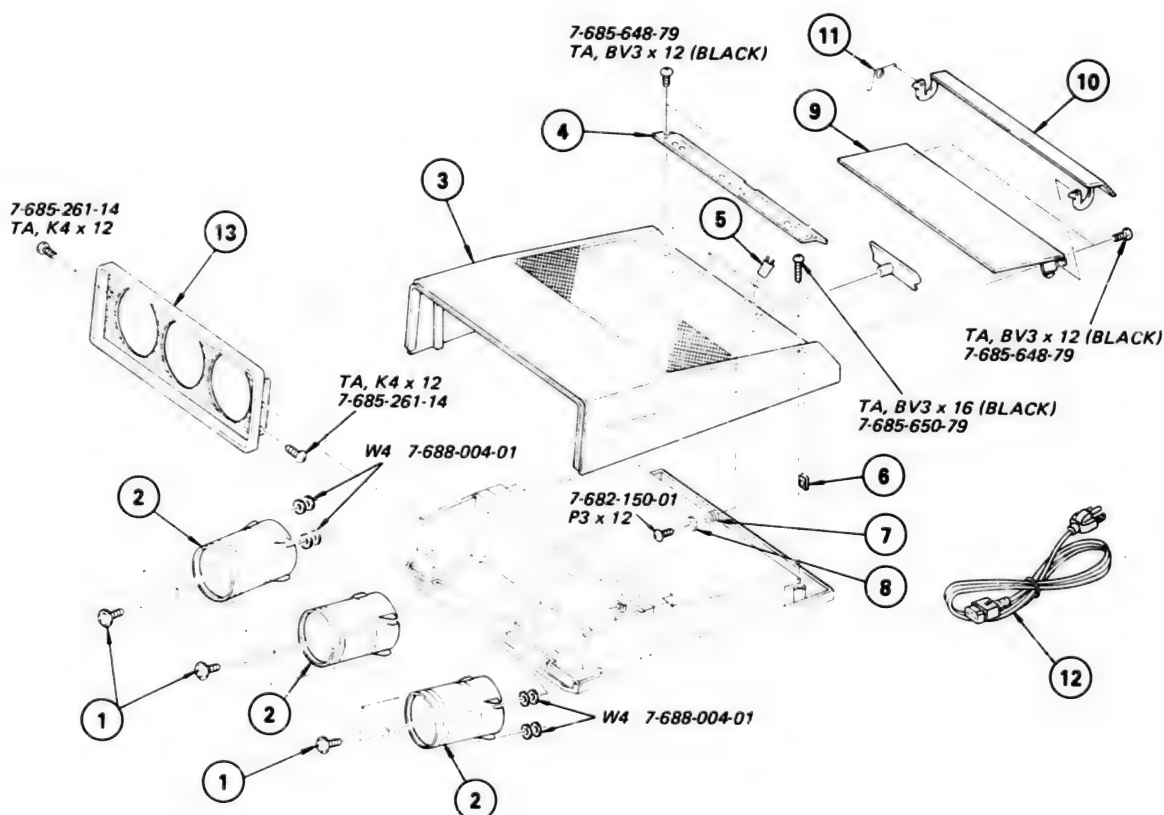
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(1) LENS

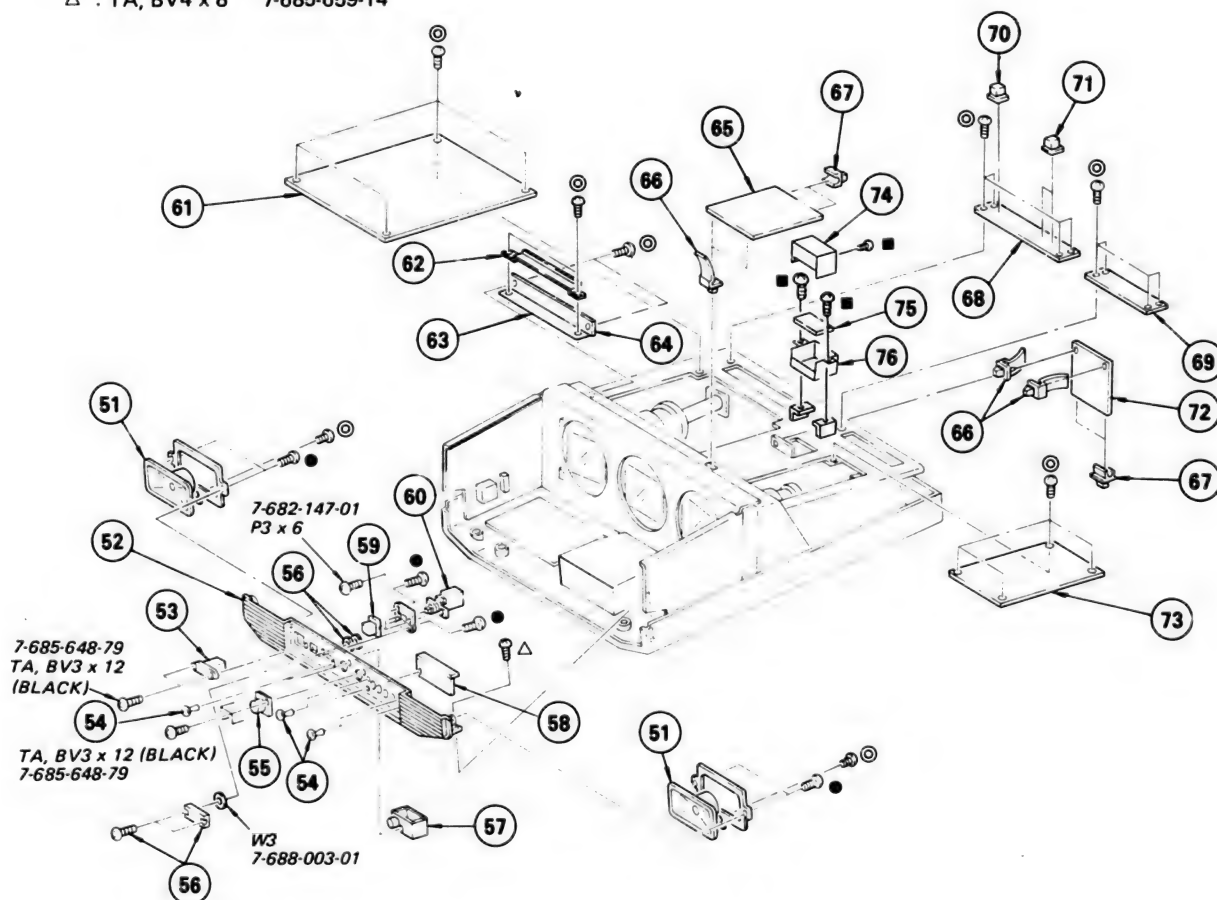


No.	Part No.	Description
1	4-302-801-00	HEAD, WASHER, TAPPING SCREW
2	4-362-801-00	LENS, DELTA 2-D
3	X-4362-807-0	HOOD ASSY
4	X-4362-803-0	PLATE ASSY, INNER
5	4-352-034-00	CATCHER, PUSH
6	4-303-407-00	NUT, SPECIAL PLATE
7	▲ 3-480-04-00	SPRING, COMPRESSION

No.	Part No.	Description
8	4-812-554-00	WASHER
9	4-362-814-00	PLATE, TOP
10	X-4362-805-0	DOOR ASSY
11	4-333-719-21	SPRING (B)
12	▲ 1-551-812-00	CORD, POWER
13	4-362-824-00	PANEL, LENS

(2) PANEL ASSY

- ◎ : TA, BV3 x 6 7-685-645-71
 ■ : TA, BV3 x 8 7-685-646-71
 ● : TA, BV3 x 12 7-685-648-71
 △ : TA, BV4 x 8 7-685-659-14



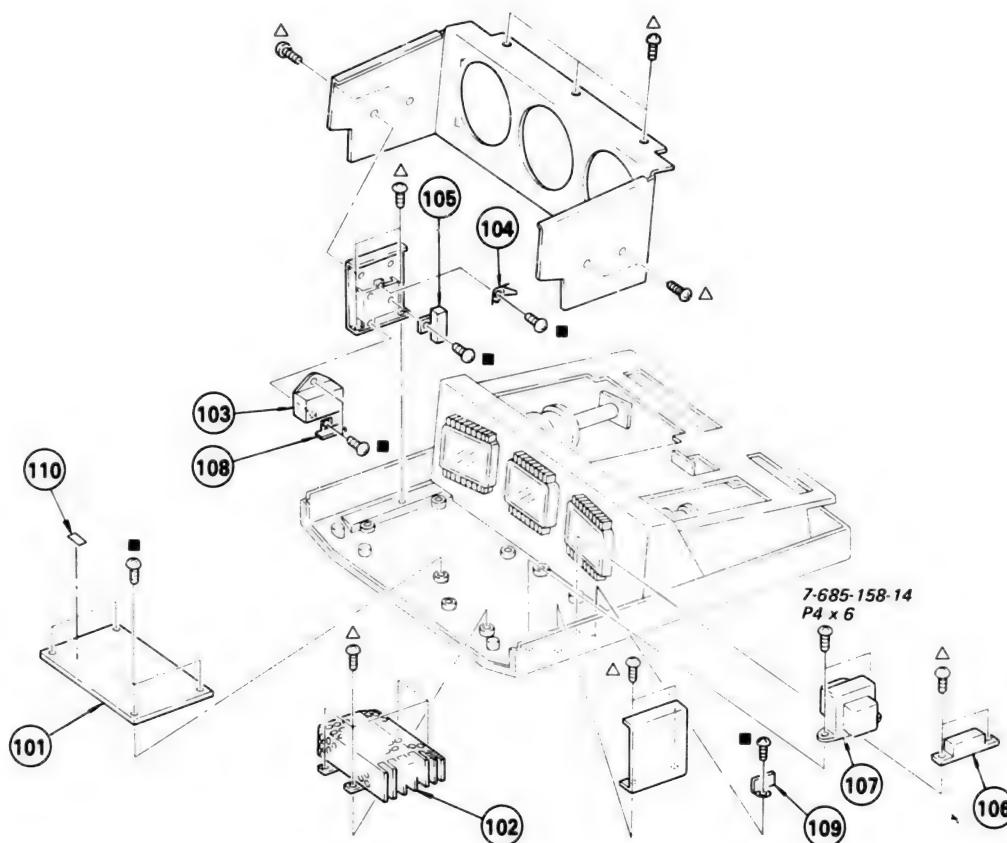
No.	Part No.	Description
51	1-503-255-00	SPEAKER
52	X-4362-806-	PANEL ASSY, CONNECTOR
53	▲1-509-547-00	3P INLET, AC IN
54	3-531-576-31	RIVET (DIA. 3), NYLON
55	1-556-937-07	CONNECTOR ASSY, MULTI
56	1-509-095-00	8P MULTI SOCKET
57	▲1-610-410-00	FB BOARD
58	▲1-610-420-00	FC BOARD
59	4-362-811-00	BUTTON, MAIN POWER
60	▲1-553-410-00	SWITCH, PUSH (POWER)
61	▲A-1340-560-A	D BOARD, COMPLETE
62	▲4-362-828-00	RETAINER (A), TRANSFORMER

Remark	No.	Part No.	Description	Remark
	63	4-362-829-00	SPACER (A), MICA	
	64	▲1-610-154-00	DB BOARD	
	65	▲1-610-184-00	EC BOARD	
	66	▲3-703-141-00	HOLDER, PCB	
	67	▲3-703-072-00	HOLDER, PCB	
	68	▲1-609-357-00	HA BOARD	
	69	▲1-609-356-00	HB BOARD	
	70	4-362-808-00	BUTTON, POWER	
	71	4-362-809-00	BUTTON, SELECT	
	72	▲1-609-364-00	EB BOARD	
	73	▲A-1340-578-A	E BOARD, COMPLETE	
	74	4-363-156-00	CAP (A), SHIELD	
	75	▲1-611-255-00	BD BOARD	
	76	▲4-363-155-00	CASE (A), SHIELD, D.I.	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(3) F BOARD

- : TA, BV3 x 8 7-685-646-71
 △ : TA, BV4 x 8 7-685-659-14

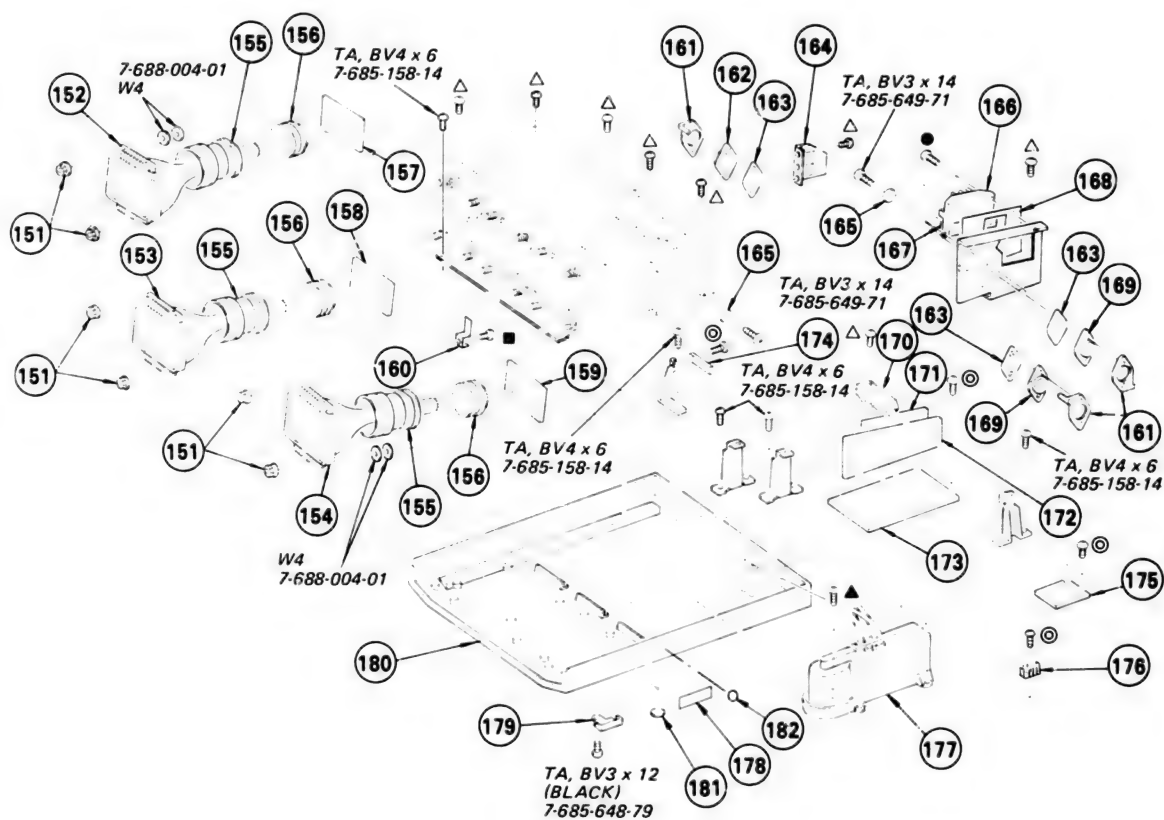


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	▲:A-1240-477-A	F BOARD, COMPLETE		106	▲.1-552-535-00	SWITCH, POWER VOLTAGE CHANGE	
102	▲.1-413-152-21	SWITCHING REGULATOR (TK-03)		107	▲.1-447-612-00	TRANSFORMER, POWER	
103	▲.1-235-219-00	FILTER, NOISE(L.F.T)		108	1-536-378-XX	L-TYPE TERMINAL STRIP	
104	▲.4-303-793-00	TERMINAL, GROUND		109	1-536-401-XX	L-TYPE TERMINAL STRIP	
105	▲.1-217-183-00	RES, WIREWOUND 2.7		110	▲ 3-701-946-26	LABEL, FUSE	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(4) BASE ASSY

- ◎ : TA, BV3 x 6 7-685-645-71
- : TA, BV3 x 8 7-685-646-71
- : TA, BV3 x 12 7-685-648-71
- △ : TA, BV4 x 8 7-685-659-14
- ▲ : TA, BV4 x 12 7-685-661-14



No.	Part No.	Description
151	4-304-749-00	NUT, FLANGE
152	▲.8-736-053-05	CRT SD-130(R)
153	▲.8-736-051-05	CRT SD-130(G)
154	▲.8-736-052-05	CRT SD-130(B)
155	▲.1-451-243-11	DEFLECTION YOKE (SY-130A)
156	▲.1-452-302-00	CRT NECK ASSEMBLY
157	▲.A-1330-408-A	CR BOARD, COMPLETE
158	▲.A-1330-409-A	CG BOARD, COMPLETE
159	▲.A-1330-410-A	CB BOARD, COMPLETE
160	4-332-209-00	SPRING
161	▲.4-314-938-01	RETAINER (TO-3), TRANSISTOR
162	8-729-301-62	TRANSISTOR 2SC1116A
163	3-701-353-00	SPACER, MICA
164	▲.4-362-849-00	INSULATOR
165	3-701-453-00	BUSHING (L), TR
166	▲.1-230-089-21	RESISTOR ASSY, HIGH-VOLTAGE (FOCUS BLOCK)

Remark	No.	Part No.	Description	Remark
	167	▲.4-362-848-00	SPACER (B)	
	168	▲.4-362-830-00	SPACER	
	169	8-729-301-32	TRANSISTOR 2SC1413A	
	170	▲.4-362-846-00	HOLDER, B PC BOARD	
	171	▲.A-1130-224-A	BB BOARD, COMPLETE	
	172	▲.A-1135-232-A	BA BOARD, COMPLETE	
	173	▲.1-609-362-00	BC BOARD	
	174	▲.1-610-153-00	HC BOARD	
	175	▲.1-610-155-00	ED BOARD	
	176	▲.4-309-624-00	TERMINAL, EARTH	
	177	▲.1-453-095-12	DC BLOCK, HIGH-VOLTAGE (FBT)	
	178	▲.4-362-873-00	LABEL, MODEL NUMBER (VPH-1020Q ONLY)	
		▲.4-362-872-00	LABEL, MODEL NUMBER (VPH-722Q ONLY)	
	179	▲.4-362-810-00	COVER	
	180	X-4362-208-0	BASE ASSY	179,181
	181	2-205-702-01	SPACER	
	182	3-701-915-01	LABEL, UL	

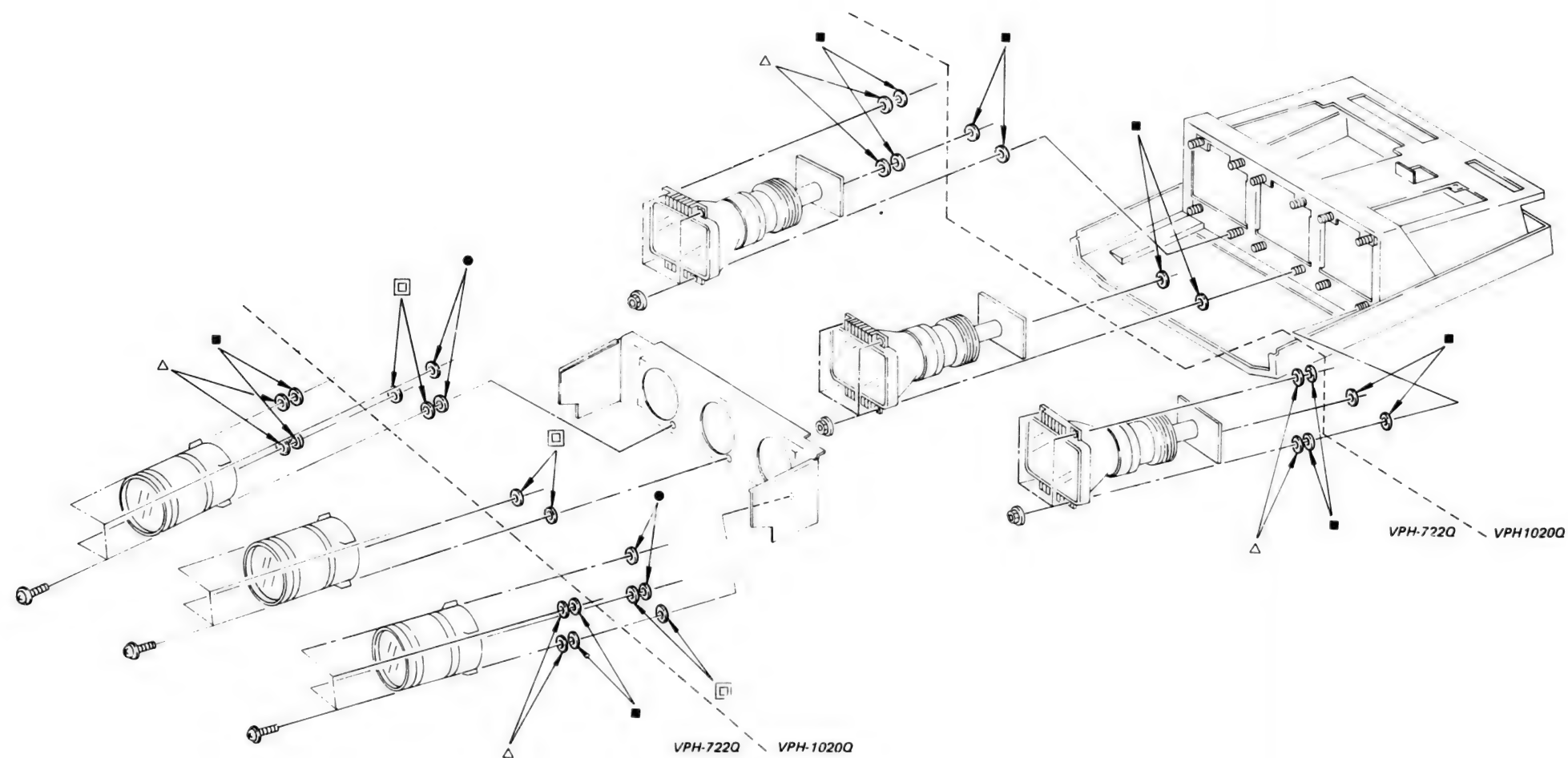
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(5) WASHERS FOR LENSES & CRTS

- : $\phi 2$ mm WASHER 3-669-117-61
- \triangle : $\phi 0.5$ mm WASHER 3-639-647-01
- : $\phi 0.8$ mm WASHER 7-688-004-01
- : $\phi 1.0$ mm WASHER 4-844-815-11

Note:

This diagram is used for both VPH-722Q and VPH-1020Q,
but the mounting washers are different for each model.
Ensure the correct washers are ordered as shown, if replacement is necessary.



SECTION 6

ELECTRICAL PARTS LIST

Bc

Bb

NOTE:

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

• Items marked " Δ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

There are overlapping about reference numbers on each circuit board. So when indicating parts by reference number, please include the board name.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
• MF : μ F, PF : μ P

RESISTORS
• All resistors are in ohms
• F : nonflammable

COILS
• MMH : mH, UH : μ H

Ref.No.Part No.	Description	Remark	Ref.No.Part No.	Description	Remark
Δ :1-609-362-00	BC BOARD *****		R15	1-247-843-00 CARBON 3.3K 5% 1/6W	
<u>CONNECTOR</u>			R16	1-247-855-00 CARBON 10K 5% 1/6W	
BC1 Δ :1-560-470-00	PIN, CONNECTOR 8P		R17	1-247-807-00 CARBON 100 5% 1/6W	
BC2 Δ :1-560-463-00	PIN, CONNECTOR 5P		R18	1-247-807-00 CARBON 100 5% 1/6W	
BC3 Δ :1-560-470-00	PIN, CONNECTOR 8P		R19	1-247-807-00 CARBON 100 5% 1/6W	
BC4 Δ :1-560-471-00	PIN, CONNECTOR 10P		R20	1-247-831-00 CARBON 1K 5% 1/6W	
BC5 Δ :1-560-470-00	PIN, CONNECTOR 8P		R21	1-247-807-00 CARBON 100 5% 1/6W	
BC6 Δ :1-560-466-00	PIN, CONNECTOR 3P		R22	1-247-807-00 CARBON 100 5% 1/6W	
BC7 Δ :1-560-466-00	PIN, CONNECTOR 3P		R23	1-247-807-00 CARBON 100 5% 1/6W	
BC8 Δ :1-560-466-00	PIN, CONNECTOR 3P		R24	1-247-807-00 CARBON 100 5% 1/6W	
BC9 Δ :1-560-469-00	PIN, CONNECTOR 6P		R25	1-247-807-00 CARBON 100 5% 1/6W	
BC10 Δ :1-560-471-00	PIN, CONNECTOR 10P		R26	1-247-807-00 CARBON 100 5% 1/6W	
BC11 Δ :1-560-456-00	PIN, CONNECTOR 2P		R27	1-247-807-00 CARBON 100 5% 1/6W	
BC12 Δ :1-561-797-00	SOCKET, MULTI CONNECTOR 15P		R28	1-247-807-00 CARBON 100 5% 1/6W	
BC13 Δ :1-561-337-00	CONNECTOR, MULTI		R29	1-246-481-00 CARBON 2.2K 5% 1/4W	
BC14 Δ :1-560-456-00	PIN, CONNECTOR 2P		R30	1-247-839-00 CARBON 2.2K 5% 1/6W	
<u>CAPACITOR</u>			R31	1-247-835-00 CARBON 1.5K 5% 1/6W	
C1	1-123-610-00 ELECT 0.47MF 20% 50V		R32	1-246-482-00 CARBON 2.4K 5% 1/4W	
C2	1-123-820-00 ELECT 33MF 20% 16V		*****		
C3	1-123-820-00 ELECT 33MF 20% 16V		Δ :A-1-240-224-A	BB BOARD, COMPLETE *****	
C4	1-123-381-00 ELECT 2.2MF 20% 50V		<u>CAPACITOR</u>		
<u>DIODE</u>			C1	1-123-617-00 ELECT 10MF 20% 16V	
D1	8-719-100-71 DIODE RD15EB-2		C2	1-123-820-00 ELECT 33MF 20% 16V	
<u>IC</u>			C3	1-123-617-00 ELECT 10MF 20% 16V	
IC1	8-759-240-53 IC TC4053BP		C4	1-123-820-00 ELECT 33MF 20% 16V	
IC2	8-759-240-53 IC TC4053BP		C5	1-123-617-00 ELECT 10MF 20% 16V	
IC3	8-759-240-53 IC TC4053BP		C6	1-123-820-00 ELECT 33MF 20% 16V	
IC4	8-759-170-12 IC UPC78M12H		C7	1-123-820-00 ELECT 33MF 20% 16V	
IC5	8-759-170-12 IC UPC78M12H		C8	1-123-820-00 ELECT 33MF 20% 16V	
<u>TRANSISTOR</u>			C9	1-123-820-00 ELECT 33MF 20% 16V	
Q1	8-729-178-54 TRANSISTOR 2SC2785		C10	1-123-820-00 ELECT 33MF 20% 16V	
<u>RESISTOR</u>			C11	1-123-820-00 ELECT 33MF 20% 16V	
R1	1-247-807-00 CARBON 100 5% 1/6W		C12	1-123-820-00 ELECT 33MF 20% 16V	
R2	1-247-807-00 CARBON 100 5% 1/6W		C13	1-102-820-00 CERAMIC 330PF 5% 50V	
R3	1-247-831-00 CARBON 1K 5% 1/6W		C14	1-102-824-00 CERAMIC 470PF 5% 50V	
R4	1-247-807-00 CARBON 100 5% 1/6W		C15	1-102-824-00 CERAMIC 470PF 5% 50V	
R5	1-247-807-00 CARBON 100 5% 1/6W		C16	1-123-617-00 ELECT 10MF 20% 16V	
R6	1-247-807-00 CARBON 100 5% 1/6W		C17	1-123-333-00 ELECT 100MF 20% 16V	
R7	1-247-835-00 CARBON 1.5K 5% 1/6W		C18	1-101-006-00 CERAMIC 0.047MF 5% 50V	
R8	1-247-835-00 CARBON 1.5K 5% 1/6W		C19	1-102-529-00 CERAMIC 100PF 5% 50V	
R9	1-247-807-00 CARBON 100 5% 1/6W		C20	1-102-529-00 CERAMIC 100PF 5% 50V	
R10	1-247-807-00 CARBON 100 5% 1/6W		C22	1-102-529-00 CERAMIC 100PF 5% 50V	
R11	1-247-807-00 CARBON 100 5% 1/6W		C23	1-102-529-00 CERAMIC 100PF 5% 50V	
R12	1-247-835-00 CARBON 1.5K 5% 1/6W		C25	1-108-579-00 MYLAR 0.01MF 5% 50V	
R13	1-247-835-00 CARBON 1.5K 5% 1/6W		C26	1-102-525-00 CERAMIC 68PF 5% 50V	
R14	1-247-831-00 CARBON 1K 5% 1/6W		C27	1-102-518-00 CERAMIC 33PF 5% 50V	
			C28	1-102-529-00 CERAMIC 100PF 5% 50V	
			C29	1-102-531-00 CERAMIC 150PF 5% 50V	
			C30	1-108-595-00 MYLAR 0.047MF 5% 50V	
			C31	1-108-595-00 MYLAR 0.047MF 5% 50V	

Bb

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R4	1-247-837-00	CARBON	1.8K 5% 1/6W	R64	1-214-179-00	METAL	91K 1% 1/4W
R5	1-247-853-00	CARBON	8.2K 5% 1/6W	R65	1-214-179-00	METAL	91K 1% 1/4W
R6	1-247-841-00	CARBON	2.7K 5% 1/6W	R66	1-247-855-00	CARBON	10K 5% 1/6W
R7	1-247-799-00	CARBON	47 5% 1/6W	R67	1-247-903-00	CARBON	1M 5% 1/6W
R8	1-247-831-00	CARBON	1K 5% 1/6W	R70	1-214-176-00	METAL	68K 1% 1/4W
R9	1-247-833-00	CARBON	1.2K 5% 1/6W	R72	1-247-843-00	CARBON	3.3K 5% 1/6W
R10	1-247-837-00	CARBON	1.8K 5% 1/6W	R73	1-247-843-00	CARBON	3.3K 5% 1/6W
R11	1-247-853-00	CARBON	8.2K 5% 1/6W	R74	1-247-835-00	CARBON	1.5K 5% 1/6W
R12	1-247-841-00	CARBON	2.7K 5% 1/6W	R75	1-247-839-00	CARBON	2.2K 5% 1/6W
R13	1-247-799-00	CARBON	47 5% 1/6W	R77	1-247-828-00	CARBON	750 5% 1/6W
R14	1-247-833-00	CARBON	1.2K 5% 1/6W	R79	1-247-863-00	CARBON	22K 5% 1/6W
R15	1-247-853-00	CARBON	8.2K 5% 1/6W	R80	1-247-839-00	CARBON	2.2K 5% 1/6W
R16	1-247-841-00	CARBON	2.7K 5% 1/6W	R81	1-247-823-00	CARBON	470 5% 1/6W
R17	1-247-799-00	CARBON	47 5% 1/6W	R82	1-247-843-00	CARBON	3.3K 5% 1/6W
R18	1-247-799-00	CARBON	47 5% 1/6W	R84	1-247-845-00	CARBON	3.9K 5% 1/6W
R19	1-247-799-00	CARBON	47 5% 1/6W	R85	1-247-823-00	CARBON	470 5% 1/6W
R20	1-246-457-00	CARBON	220 5% 1/4W	R86	1-247-821-00	CARBON	390 5% 1/6W
R21	1-246-457-00	CARBON	220 5% 1/4W	R87	1-247-855-00	CARBON	10K 5% 1/6W
R22	1-246-457-00	CARBON	220 5% 1/4W	R88	1-247-863-00	CARBON	22K 5% 1/6W
R26	1-247-799-00	CARBON	47 5% 1/6W	R89	1-247-841-00	CARBON	2.7K 5% 1/6W
R27	1-247-829-00	CARBON	820 5% 1/6W	R99	1-247-875-00	CARBON	68K 5% 1/6W
R28	1-247-815-00	CARBON	220 5% 1/6W	R100	1-247-843-00	CARBON	3.3K 5% 1/6W
R29	1-247-787-00	CARBON	15 5% 1/6W	R101	1-247-861-00	CARBON	18K 5% 1/6W
R30	1-247-815-00	CARBON	220 5% 1/6W	R102	1-247-863-00	CARBON	22K 5% 1/6W
R31	1-247-783-00	CARBON	10 5% 1/6W	R103	1-247-859-00	CARBON	15K 5% 1/6W
R32	1-247-832-00	CARBON	1.1K 5% 1/6W	R104	1-247-855-00	CARBON	10K 5% 1/6W
R33	1-247-818-00	CARBON	300 5% 1/6W	R105	1-247-875-00	CARBON	68K 5% 1/6W
R34	1-247-799-00	CARBON	47 5% 1/6W	R106	1-247-851-00	CARBON	6.8K 5% 1/6W
R35	1-247-829-00	CARBON	820 5% 1/6W	R107	1-247-853-00	CARBON	8.2K 5% 1/6W
R36	1-247-817-00	CARBON	270 5% 1/6W	R108	1-247-855-00	CARBON	10K 5% 1/6W
R37	1-247-787-00	CARBON	15 5% 1/6W	R109	1-247-855-00	CARBON	10K 5% 1/6W
R38	1-247-799-00	CARBON	47 5% 1/6W	R110	1-247-867-00	CARBON	33K 5% 1/6W
R39	1-247-829-00	CARBON	820 5% 1/6W	R112	1-247-807-00	CARBON	100 5% 1/6W
R40	1-247-815-00	CARBON	220 5% 1/6W	R113	1-247-807-00	CARBON	100 5% 1/6W
R41	1-247-787-00	CARBON	15 5% 1/6W	R114	1-247-807-00	CARBON	100 5% 1/6W
R42	1-247-807-00	CARBON	100 5% 1/6W	R115	1-247-807-00	CARBON	100 5% 1/6W
R43	1-247-855-00	CARBON	10K 5% 1/6W	R116	1-247-807-00	CARBON	100 5% 1/6W
R44	1-247-855-00	CARBON	10K 5% 1/6W	R121	1-247-873-00	CARBON	56K 5% 1/6W
R45	1-247-855-00	CARBON	10K 5% 1/6W	R123	1-247-835-00	CARBON	1.5K 5% 1/6W
R46	1-214-165-00	METAL	24K 1% 1/4W	R124	1-247-835-00	CARBON	1.5K 5% 1/6W
R47	1-247-835-00	CARBON	1.5K 5% 1/6W	R127	1-247-831-00	CARBON	1K 5% 1/6W
R48	1-214-165-00	METAL	24K 1% 1/4W	R128	1-247-831-00	CARBON	1K 5% 1/6W
R49	1-247-869-00	CARBON	39K 5% 1/6W	R129	1-247-831-00	CARBON	1K 5% 1/6W
R51	1-214-176-00	METAL	68K 1% 1/4W	R133	1-247-807-00	CARBON	100 5% 1/6W
R52	1-202-469-00	SOLID	3.9M 5% 1/4W	R134	1-247-807-00	CARBON	100 5% 1/6W
R53	1-214-179-00	METAL	91K 1% 1/4W	R135	1-247-807-00	CARBON	100 5% 1/6W
R54	1-247-863-00	CARBON	22K 5% 1/6W	R136	1-247-901-00	CARBON	820K 5% 1/6W
R55	1-247-831-00	CARBON	1K 5% 1/6W	R137	1-247-857-00	CARBON	12K 5% 1/6W
R56	1-247-831-00	CARBON	1K 5% 1/6W	R139	1-246-461-00	CARBON	330 5% 1/4W
R57	1-247-831-00	CARBON	1K 5% 1/6W	R140	1-247-855-00	CARBON	10K 5% 1/6W
R58	1-247-831-00	CARBON	1K 5% 1/6W	R143	1-247-845-00	CARBON	3.9K 5% 1/6W
R62	1-247-839-00	CARBON	2.2K 5% 1/6W	R144	1-247-838-00	CARBON	2K 5% 1/6W
R63	1-247-843-00	CARBON	3.3K 5% 1/6W	R145	1-247-817-00	CARBON	270 5% 1/6W

Bb

Ba

Ref.No.	Part No.	Description	Remark
R146	1-247-837-00	CARBON 1.8K 5% 1/6W	
R147	1-247-848-00	CARBON 5.1K 5% 1/6W	
R148	1-247-855-00	CARBON 10K 5% 1/6W	
R149	1-247-859-00	CARBON 15K 5% 1/6W	
R150	1-247-843-00	CARBON 3.3K 5% 1/6W	
R151	1-214-180-00	METAL 100K 1% 1/4W	
R152	1-214-179-00	METAL 91K 1% 1/4W	
R153	1-247-843-00	CARBON 3.3K 5% 1/6W	
R154	1-247-845-00	CARBON 3.9K 5% 1/6W	
VARIABLE RESISTOR			
RV1	1-224-487-00	RES, ADJ, METAL FILM 220	
RV2	1-224-487-00	RES, ADJ, METAL FILM 220	
RV3	1-224-487-00	RES, ADJ, METAL FILM 220	
RV4	1-226-709-00	RES, ADJ, SOLID 4.7K	
RV5	1-226-715-00	RES, ADJ, SOLID 470K	
RV7	1-226-753-00	RES, ADJ, SOLID 47K	
RV8	1-226-753-00	RES, ADJ, SOLID 47K	
RV9	1-226-713-00	RES, ADJ, SOLID 100K	
RV10	1-226-713-00	RES, ADJ, SOLID 100K	

▲:A-1135-232-A BA BOARD, COMPLETE

▲:4-363-155-00 CASE (A), SHIELD, D.L
▲:4-363-156-00 CAP (A), SHIELD

CONNECTOR

BA1 ▲:1-560-129-00 PLUG, CONNECTOR (2.5MM) 9P

CAPACITOR

C1	1-130-632-00	FILM 0.1MF 5% 50V	
C2	1-123-617-00	ELECT 10MF 20% 16V	
C3	1-123-619-00	ELECT 4.7MF 20% 50V	
C4	1-123-619-00	ELECT 4.7MF 20% 50V	
C5	1-123-617-00	ELECT 10MF 20% 16V	
C6	1-130-632-00	FILM 0.1MF 5% 50V	
C7	1-123-617-00	ELECT 10MF 20% 16V	
C18	1-123-617-00	ELECT 10MF 20% 16V	
C19	1-101-006-00	CERAMIC 0.047MF 50V	
C20	1-102-944-00	CERAMIC 7PF 0.5PF 50V	
C21	1-102-944-00	CERAMIC 7PF 0.5PF 50V	
C22	1-102-944-00	CERAMIC 7PF 0.5PF 50V	
C23	1-102-944-00	CERAMIC 7PF 0.5PF 50V	
C24	1-102-679-00	CERAMIC 120PF 5% 50V	
C25	1-123-617-00	ELECT 10MF 20% 16V	
C26	1-102-108-00	CERAMIC 150PF 10% 50V	
C27	1-101-888-00	CERAMIC 68PF 5% 50V	
C28	1-101-884-00	CERAMIC 56PF 5% 50V	
C29	1-102-114-00	CERAMIC 470PF 10% 50V	
C30	1-102-114-00	CERAMIC 470PF 10% 50V	

Ref.No.	Part No.	Description	Remark
C31	1-102-973-00	CERAMIC 100PF 5% 50V	
C32	1-130-620-00	FILM 0.01MF 5% 50V	
C33	1-101-888-00	CERAMIC 68PF 5% 50V	
C34	1-123-617-00	ELECT 10MF 20% 16V	
C36	1-102-110-00	CERAMIC 220PF 10% 50V	
C37	1-102-115-00	CERAMIC 560PF 10% 50V	
C38	1-123-617-00	ELECT 10MF 20% 16V	
C39	1-123-617-00	ELECT 10MF 20% 16V	
C40	1-101-006-00	CERAMIC 0.047MF 50V	
C43	1-101-006-00	CERAMIC 0.047MF 50V	
C44	1-101-361-00	CERAMIC 150PF 5% 50V	
C45	1-102-973-00	CERAMIC 100PF 5% 50V	
C46	1-101-004-00	CERAMIC 0.01MF 50V	
C47	1-102-959-00	CERAMIC 22PF 5% 50V	
C48	1-101-880-00	CERAMIC 47PF 5% 50V	
C49	1-102-944-00	CERAMIC 7PF 0.5PF 50V	
C50	1-130-628-00	FILM 0.047MF 5% 50V	
C51	1-130-628-00	FILM 0.047MF 5% 50V	
C52	1-123-612-00	ELECT 2.2MF 20% 50V	
C53	1-102-852-00	CERAMIC 47PF 5% 50V	
C54	1-102-852-00	CERAMIC 47PF 5% 50V	
C55	1-101-880-00	CERAMIC 47PF 5% 50V	
C56	1-102-953-00	CERAMIC 18PF 5% 50V	
C57	1-102-935-00	CERAMIC 2PF 0.25PF 50V	
C58	1-102-971-00	CERAMIC 82PF 5% 50V	
C59	1-101-004-00	CERAMIC 0.01MF 50V	
C60	1-101-004-00	CERAMIC 0.01MF 50V	
C61	1-101-004-00	CERAMIC 0.01MF 50V	
C62	1-101-004-00	CERAMIC 0.01MF 50V	
C63	1-101-004-00	CERAMIC 0.01MF 50V	
C64	1-123-617-00	ELECT 10MF 20% 16V	
C65	1-130-632-00	FILM 0.1MF 5% 50V	
C67	1-121-257-00	ELECT 4.7MF 20% 16V	
C68	1-123-333-00	ELECT 100MF 20% 16V	
C69	1-123-611-00	ELECT 1MF 20% 50V	
C70	1-123-616-00	ELECT 4.7MF 20% 25V	
C71	1-123-611-00	ELECT 1MF 20% 50V	
C72	1-123-611-00	ELECT 1MF 20% 50V	
C73	1-123-617-00	ELECT 10MF 20% 16V	
C74	1-101-004-00	CERAMIC 0.01MF 50V	
C75	1-123-611-00	ELECT 1MF 20% 50V	
C76	1-123-333-00	ELECT 100MF 20% 16V	
C78	1-101-004-00	CERAMIC 0.01MF 50V	
C79	1-121-257-00	ELECT 4.7MF 20% 16V	
C80	1-102-971-00	CERAMIC 82PF 5% 50V	
C81	1-102-108-00	CERAMIC 150PF 10% 50V	
C82	1-102-971-00	CERAMIC 82PF 5% 50V	
C83	1-102-108-00	CERAMIC 150PF 10% 50V	
C84	1-123-610-00	ELECT 0.47MF 20% 50V	
C85	1-130-632-00	FILM 0.1MF 5% 50V	
C86	1-102-525-00	CERAMIC 68PF 5% 50V	
C87	1-123-611-00	ELECT 1MF 20% 50V	
C88	1-102-892-00	CERAMIC 22PF 5% 50V	

Ba

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R12	1-247-837-00	CARBON	1.8K 5% 1/6W	R75	1-247-867-00	CARBON	33K 5% 1/6W
R13	1-247-815-00	CARBON	220 5% 1/6W	R76	1-247-875-00	CARBON	68K 5% 1/6W
R14	1-247-835-00	CARBON	1.5K 5% 1/6W	R77	1-247-845-00	CARBON	3.9K 5% 1/6W
R15	1-247-833-00	CARBON	1.2K 5% 1/6W	R78	1-247-839-00	CARBON	2.2K 5% 1/6W
R16	1-247-825-00	CARBON	560 5% 1/6W	R79	1-247-875-00	CARBON	68K 5% 1/6W
R17	1-247-875-00	CARBON	68K 5% 1/6W	R80	1-247-903-00	CARBON	1M 5% 1/6W
R18	1-247-855-00	CARBON	10K 5% 1/6W	R81	1-247-867-00	CARBON	33K 5% 1/6W
R19	1-247-833-00	CARBON	1.2K 5% 1/6W	R82	1-247-871-00	CARBON	47K 5% 1/6W
R20	1-247-835-00	CARBON	1.5K 5% 1/6W	R83	1-247-867-00	CARBON	33K 5% 1/6W
R21	1-247-835-00	CARBON	1.5K 5% 1/6W	R84	1-247-823-00	CARBON	470 5% 1/6W
R22	1-247-835-00	CARBON	1.5K 5% 1/6W	R85	1-247-865-00	CARBON	27K 5% 1/6W
R23	1-247-821-00	CARBON	390 5% 1/6W	R86	1-247-839-00	CARBON	2.2K 5% 1/6W
R24	1-247-813-00	CARBON	180 5% 1/6W	R87	1-247-865-00	CARBON	27K 5% 1/6W
R25	1-247-867-00	CARBON	33K 5% 1/6W	R88	1-247-903-00	CARBON	1M 5% 1/6W
R26	1-247-879-00	CARBON	100K 5% 1/6W	R89	1-247-827-00	CARBON	680 5% 1/6W
R27	1-247-859-00	CARBON	15K 5% 1/6W	R90	1-247-903-00	CARBON	1M 5% 1/6W
R28	1-247-879-00	CARBON	100K 5% 1/6W	R91	1-247-827-00	CARBON	680 5% 1/6W
R29	1-247-859-00	CARBON	15K 5% 1/6W	R92	1-247-831-00	CARBON	1K 5% 1/6W
R30	1-247-851-00	CARBON	6.8K 5% 1/6W	R93	1-247-879-00	CARBON	100K 5% 1/6W
R31	1-247-867-00	CARBON	33K 5% 1/6W	R94	1-247-887-00	CARBON	220K 5% 1/6W
R32	1-247-855-00	CARBON	10K 5% 1/6W	R95	1-247-879-00	CARBON	100K 5% 1/6W
R33	1-247-855-00	CARBON	10K 5% 1/6W	R96	1-247-839-00	CARBON	2.2K 5% 1/6W
R34	1-247-855-00	CARBON	10K 5% 1/6W	R97	1-247-855-00	CARBON	10K 5% 1/6W
R35	1-247-831-00	CARBON	1K 5% 1/6W	R98	1-247-867-00	CARBON	33K 5% 1/6W
R36	1-247-847-00	CARBON	4.7K 5% 1/6W	R99	1-247-835-00	CARBON	1.5K 5% 1/6W
R37	1-247-837-00	CARBON	1.8K 5% 1/6W	R100	1-247-879-00	CARBON	100K 5% 1/6W
R38	1-247-829-00	CARBON	820 5% 1/6W	R101	1-247-873-00	CARBON	56K 5% 1/6W
R39	1-247-843-00	CARBON	3.3K 5% 1/6W	R102	1-247-877-00	CARBON	82K 5% 1/6W
R40	1-247-843-00	CARBON	3.3K 5% 1/6W	R103	1-247-867-00	CARBON	33K 5% 1/6W
R41	1-247-879-00	CARBON	100K 5% 1/6W	R104	1-247-875-00	CARBON	68K 5% 1/6W
R42	1-247-903-00	CARBON	1M 5% 1/6W	R105	1-247-877-00	CARBON	82K 5% 1/6W
R43	1-247-837-00	CARBON	1.8K 5% 1/6W	R106	1-247-855-00	CARBON	10K 5% 1/6W
R44	1-247-825-00	CARBON	560 5% 1/6W	R107	1-247-815-00	CARBON	220 5% 1/6W
R45	1-247-799-00	CARBON	47 5% 1/6W	R108	1-247-875-00	CARBON	68K 5% 1/6W
R54	1-247-843-00	CARBON	3.3K 5% 1/6W	R109	1-247-855-00	CARBON	10K 5% 1/6W
R55	1-247-865-00	CARBON	27K 5% 1/6W	R110	1-247-855-00	CARBON	10K 5% 1/6W
R56	1-247-847-00	CARBON	4.7K 5% 1/6W	R111	1-247-815-00	CARBON	220 5% 1/6W
R57	1-247-843-00	CARBON	3.3K 5% 1/6W	R112	1-247-871-00	CARBON	47K 5% 1/6W
R58	1-247-807-00	CARBON	100 5% 1/6W	R113	1-247-867-00	CARBON	33K 5% 1/6W
R59	1-247-807-00	CARBON	100 5% 1/6W	R114	1-247-815-00	CARBON	220 5% 1/6W
R60	1-247-831-00	CARBON	1K 5% 1/6W	R115	1-247-815-00	CARBON	220 5% 1/6W
R61	1-247-819-00	CARBON	330 5% 1/6W	R116	1-247-815-00	CARBON	220 5% 1/6W
R62	1-247-831-00	CARBON	1K 5% 1/6W	R117	1-247-821-00	CARBON	390 5% 1/6W
R63	1-247-835-00	CARBON	1.5K 5% 1/6W	R118	1-247-823-00	CARBON	470 5% 1/6W
R64	1-247-843-00	CARBON	3.3K 5% 1/6W	R119	1-247-807-00	CARBON	100 5% 1/6W
R65	1-247-827-00	CARBON	680 5% 1/6W	R120	1-247-827-00	CARBON	680 5% 1/6W
R66	1-247-831-00	CARBON	1K 5% 1/6W	R121	1-247-849-00	CARBON	5.6K 5% 1/6W
R67	1-247-805-00	CARBON	82 5% 1/6W	R122	1-247-847-00	CARBON	4.7K 5% 1/6W
R68	1-247-831-00	CARBON	1K 5% 1/6W	R123	1-247-847-00	CARBON	4.7K 5% 1/6W
R69	1-247-863-00	CARBON	22K 5% 1/6W	R124	1-247-815-00	CARBON	220 5% 1/6W
R72	1-247-824-00	CARBON	510 5% 1/6W	R125	1-247-879-00	CARBON	100K 5% 1/6W
R73	1-247-839-00	CARBON	2.2K 5% 1/6W	R126	1-247-879-00	CARBON	100K 5% 1/6W
R74	1-247-859-00	CARBON	15K 5% 1/6W	R127	1-247-845-00	CARBON	3.9K 5% 1/6W

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BD

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R128	1-247-867-00	CARBON	33K 5% 1/6W	R181	1-247-855-00	CARBON	10K 5% 1/6W
R129	1-247-835-00	CARBON	1.5K 5% 1/6W	R182	1-247-871-00	CARBON	47K 5% 1/6W
R130	1-247-807-00	CARBON	100 5% 1/6W	R183	1-247-843-00	CARBON	3.3K 5% 1/6W
R131	1-247-831-00	CARBON	1K 5% 1/6W	R184	1-247-833-00	CARBON	1.2K 5% 1/6W
R132	1-247-831-00	CARBON	1K 5% 1/6W	R185	1-247-819-00	CARBON	330 5% 1/6W
R133	1-247-855-00	CARBON	10K 5% 1/6W	R186	1-247-831-00	CARBON	1K 5% 1/6W
R134	1-247-849-00	CARBON	5.6K 5% 1/6W	R187	1-247-887-00	CARBON	220K 5% 1/6W
R135	1-247-847-00	CARBON	4.7K 5% 1/6W	R188	1-247-807-00	CARBON	100 5% 1/6W
R136	1-247-857-00	CARBON	12K 5% 1/6W	R188	1-247-831-00	CARBON	1K 5% 1/6W
R137	1-247-847-00	CARBON	4.7K 5% 1/6W	R189	1-247-847-00	CARBON	4.7K 5% 1/6W
R138	1-247-877-00	CARBON	82K 5% 1/6W	R190	1-247-831-00	CARBON	1K 5% 1/6W
R139	1-247-887-00	CARBON	220K 5% 1/6W	<u>VARIABLE RESISTOR</u>			
R140	1-247-847-00	CARBON	4.7K 5% 1/6W	RV1	1-226-753-00	RES, ADJ, SOLID	47K
R141	1-247-835-00	CARBON	1.5K 5% 1/6W	RV2	1-226-753-00	RES, ADJ, SOLID	47K
R142	1-247-863-00	CARBON	22K 5% 1/6W	RV4	1-226-709-00	RES, ADJ, SOLID	4.7K
R143	1-247-865-00	CARBON	27K 5% 1/6W	RV5	1-226-711-00	RES, ADJ, SOLID	22K
R144	1-247-867-00	CARBON	33K 5% 1/6W	RV6	1-226-711-00	RES, ADJ, SOLID	22K
R145	1-247-869-00	CARBON	39K 5% 1/6W	RV7	1-226-706-00	RES, ADJ, SOLID	470
R146	1-247-877-00	CARBON	82K 5% 1/6W	RV8	1-226-709-00	RES, ADJ, SOLID	4.7K
R147	1-247-869-00	CARBON	39K 5% 1/6W	RV9	1-226-710-00	RES, ADJ, SOLID	10K
R148	1-247-871-00	CARBON	47K 5% 1/6W	RV10	1-226-753-00	RES, ADJ, SOLID	47K
R149	1-247-867-00	CARBON	33K 5% 1/6W	RV11	1-226-709-00	RES, ADJ, SOLID	4.7K
R150	1-247-853-00	CARBON	8.2K 5% 1/6W	<u>TRANSFORMER</u>			
R151	1-247-853-00	CARBON	8.2K 5% 1/6W	T2	1-409-193-00	COIL 3.58MHZ TRAP	
R152	1-247-831-00	CARBON	1K 5% 1/6W	T3	1-409-193-00	COIL 3.58MHZ TRAP	
R153	1-202-463-00	SOLID	2.2M 5% 1/4W	T4	1-425-786-00	TRANSFORMER, BANDPASS(BPT)	
R154	1-247-879-00	CARBON	100K 5% 1/6W	T5	1-404-146-00	TRANSFORMER	
R155	1-247-853-00	CARBON	8.2K 5% 1/6W	T6	1-404-081-00	TRANSFORMER, DELAY ADJUST	
R156	1-247-843-00	CARBON	3.3K 5% 1/6W	T7	1-408-513-00	COIL (VARIABLE)	
R157	1-247-871-00	CARBON	47K 5% 1/6W	T8	1-408-532-00	COIL, VARIABLE	
R158	1-247-859-00	CARBON	15K 5% 1/6W	T9	1-408-532-00	COIL, VARIABLE	
R159	1-247-859-00	CARBON	15K 5% 1/6W	<u>THERMISTOR</u>			
R160	1-247-871-00	CARBON	47K 5% 1/6W	TH1	1-800-626-00	THERMISTOR	
R161	1-247-839-00	CARBON	2.2K 5% 1/6W	<u>CRYSTAL</u>			
R162	1-247-879-00	CARBON	100K 5% 1/6W	X1	1-527-396-00	CRYSTAL, OSC	
R163	1-247-817-00	CARBON	270 5% 1/6W	X2	1-527-345-00	CRYSTAL, OSC	
R164	1-247-819-00	CARBON	330 5% 1/6W	*****			
R165	1-247-829-00	CARBON	820 5% 1/6W	♣:1-611-255-00 BD BOARD			
R166	1-247-865-00	CARBON	27K 5% 1/6W	*****			
R167	1-247-859-00	CARBON	15K 5% 1/6W	<u>CONNECTOR</u>			
R168	1-247-835-00	CARBON	1.5K 5% 1/6W	BD1	♣:1-560-129-00	PLUG, CONNECTOR (2.5MM) 9P	
R169	1-247-847-00	CARBON	4.7K 5% 1/6W	<u>CAPACITOR</u>			
R170	1-247-871-00	CARBON	47K 5% 1/6W	C1	1-102-074-00	CERAMIC	0.001MF 10% 50V
R171	1-247-859-00	CARBON	15K 5% 1/6W	C2	1-161-013-00	CERAMIC	0.01MF 10% 25V
R172	1-247-875-00	CARBON	68K 5% 1/6W	C3	1-161-013-00	CERAMIC	0.01MF 10% 25V
R173	1-247-847-00	CARBON	4.7K 5% 1/6W				
R174	1-247-843-00	CARBON	3.3K 5% 1/6W				
R175	1-247-843-00	CARBON	3.3K 5% 1/6W				
R176	1-247-871-00	CARBON	47K 5% 1/6W				
R177	1-247-851-00	CARBON	6.8K 5% 1/6W				
R178	1-247-875-00	CARBON	68K 5% 1/6W				
R179	1-247-867-00	CARBON	33K 5% 1/6W				
R180	1-247-831-00	CARBON	1K 5% 1/6W				

B_D
F_B
F_C
F

Ref.No.	Part No.	Description	Remark
C4	1-101-888-00	CERAMIC 68PF 5% 50V	
C5	1-101-880-00	CERAMIC 47PF 5% 50V	
C6	1-161-013-00	CERAMIC 0.01MF 10% 25V	
C7	1-102-952-00	CERAMIC 16PF 5% 50V	
C8	1-123-357-00	ELECT 22MF 20% 50V	
C9	1-101-006-00	CERAMIC 0.047MF 50V	

DELAY LINE

DL1	1-415-284-00	DELAY LINE (1H)	
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IC

IC1	8-759-608-65	IC CX865	
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COIL

L1	1-408-520-00	COIL, VARIABLE	
L2	1-407-160-XX	MICRO INDUCTOR 18UH	
L3	1-407-167-XX	MICRO INDUCTOR 68UH	

RESISTOR

R1	1-247-846-00	CARBON 4.3K 5% 1/6W	
R2	1-247-825-00	CARBON 560 5% 1/6W	
R3	1-247-806-00	CARBON 91 5% 1/6W	
R4	1-247-847-00	CARBON 4.7K 5% 1/6W	
R5	1-247-820-00	CARBON 360 5% 1/6W	
R6	1-247-837-00	CARBON 1.8K 5% 1/6W	
R7	1-247-807-00	CARBON 100 5% 1/6W	
R8	1-247-807-00	CARBON 100 5% 1/6W	
R9	1-247-807-00	CARBON 100 5% 1/6W	

VARIABLE RESISTOR

RV1	1-226-706-00	RES, ADJ, SOLID 470	
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▲:1-610-419-00 FB BOARD

1-536-799-00 TERMINAL BOARD, INPUT/OUTPUT B

▲:1-610-420-00 FC BOARD

1-536-798-00 TERMINAL BOARD, INPUT/OUTPUT A

▲:A-1240-477-A F BOARD, COMPLETE

▲:1-533-146-00 HOLDER, FUSE
▲:3-701-946-11 LABEL, FUSE

Ref.No.	Part No.	Description	Remark
<u>CAPACITOR</u>			
C1	1-123-321-00	ELECT 220MF 20% 16V	
C2	1-123-356-00	ELECT 10MF 20% 16V	
C4	1-123-321-00	ELECT 220MF 20% 16V	
C5	1-123-356-00	ELECT 10MF 20% 16V	
C7	1-123-321-00	ELECT 220MF 20% 16V	
C8	1-123-356-00	ELECT 10MF 20% 16V	
C10	1-123-321-00	ELECT 220MF 20% 16V	
C11	1-123-321-00	ELECT 220MF 20% 16V	
C12	1-123-333-00	ELECT 100MF 20% 16V	
C13	1-123-820-00	ELECT 33MF 20% 16V	
C14	1-102-824-00	CERAMIC 470PF 5% 50V	
C15	1-102-820-00	CERAMIC 330PF 5% 50V	
C17	1-123-820-00	ELECT 33MF 20% 16V	
C18	1-101-006-00	CERAMIC 0.047MF 50V	
C19	1-123-617-00	ELECT 10MF 20% 16V	
C20	1-123-322-00	ELECT 330MF 20% 16V	
C24	1-102-852-00	CERAMIC 47PF 5% 50V	
C25	1-102-527-00	CERAMIC 82PF 5% 50V	
C26	1-123-617-00	ELECT 10MF 20% 16V	
C27	1-123-617-00	ELECT 10MF 20% 16V	
C28	1-123-617-00	ELECT 10MF 20% 16V	
C29	1-123-820-00	ELECT 33MF 20% 16V	
C30	1-123-617-00	ELECT 10MF 20% 16V	
C31	1-123-617-00	ELECT 10MF 20% 16V	
C32	1-123-617-00	ELECT 10MF 20% 16V	
C33	1-123-617-00	ELECT 10MF 20% 16V	
C34	1-101-004-00	CERAMIC 0.01MF 50V	
C201	1-151-830-00	CERAMIC 0.0047MF 500V	
C202	1-161-830-00	CERAMIC 0.0047MF 500V	
C203	1-125-215-00	ELECT(BLOCK) 560MF 200V	
C204	1-125-215-00	ELECT(BLOCK) 560MF 200V	
C205	1-101-006-00	CERAMIC 0.047MF 50V	
C206	1-101-006-00	CERAMIC 0.047MF 50V	
C207	1-123-363-00	ELECT 470MF 20% 50V	
C208	1-121-999-00	ELECT 10MF 160V	
C209	1-123-333-00	ELECT 100MF 20% 25V	
C/10	1-123-333-00	ELECT 100MF 20% 25V	
C211	1-123-324-00	ELECT 1000MF 20% 16V	
C212	1-101-004-00	CERAMIC 0.01MF 50V	
C213	1-123-613-00	ELECT 3.3MF 20% 50V	
C301	1-123-820-00	ELECT 33MF 20% 16V	
C302	1-123-379-00	ELECT 0.47MF 20% 50V	
C303	1-123-333-00	ELECT 100MF 20% 16V	
C304	1-123-379-00	ELECT 0.47MF 20% 50V	
C305	1-102-824-00	CERAMIC 470PF 5% 50V	
C306	1-123-332-00	ELECT 47MF 20% 25V	
C307	1-123-336-00	ELECT 470MF 20% 25V	
C308	1-123-332-00	ELECT 47MF 20% 25V	
C309	1-108-563-00	MYLAR 0.0022MF 5% 50V	
C310	1-123-332-00	ELECT 47MF 20% 25V	
C311	1-123-332-00	ELECT 47MF 20% 25V	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q202	8-729-178-54	TRANSISTOR ZSC2785		R53	1-247-874-00	CARBON 62K 5% 1/6W	
Q301	8-729-117-54	TRANSISTOR ZSA1175		R54	1-247-866-00	CARBON 30K 5% 1/6W	
RESISTOR				R55	1-247-855-00	CARBON 10K 5% 1/6W	
R1	1-214-110-00	METAL 120 1% 1/4W		R56	1-247-855-00	CARBON 10K 5% 1/6W	
R2	1-214-116-00	METAL 220 1% 1/4W		R57	1-247-831-00	CARBON 1K 5% 1/6W	
R3	1-214-128-00	METAL 680 1% 1/4W		R58	1-247-804-00	CARBON 75 5% 1/6W	
R4	1-247-817-00	CARBON 270 5% 1/6W		R59	1-247-825-00	CARBON 560 5% 1/6W	
R5	1-247-807-00	CARBON 100 5% 1/6W		R60	1-247-825-00	CARBON 560 5% 1/6W	
R6	1-247-837-00	CARBON 1.8K 5% 1/6W		R61	1-247-825-00	CARBON 560 5% 1/6W	
R7	1-247-809-00	CARBON 120 5% 1/6W		R62	1-247-867-00	CARBON 33K 5% 1/6W	
R8	1-247-839-00	CARBON 2.2K 5% 1/6W		R63	1-247-867-00	CARBON 33K 5% 1/6W	
R10	1-214-110-00	METAL 120 1% 1/4W		R64	1-247-807-00	CARBON 100 5% 1/6W	
R11	1-214-116-00	METAL 220 1% 1/4W		R65	1-247-846-00	CARBON 4.3K 5% 1/6W	
R12	1-214-128-00	METAL 680 1% 1/4W		R66	1-247-845-00	CARBON 3.9K 5% 1/6W	
R13	1-247-817-00	CARBON 270 5% 1/6W		R67	1-247-825-00	CARBON 560 5% 1/6W	
R14	1-247-807-00	CARBON 100 5% 1/6W		R68	1-247-839-00	CARBON 2.2K 5% 1/6W	
R15	1-247-837-00	CARBON 1.8K 5% 1/6W		R69	1-247-863-00	CARBON 22K 5% 1/6W	
R16	1-247-809-00	CARBON 120 5% 1/6W		R70	1-247-873-00	CARBON 56K 5% 1/6W	
R17	1-247-839-00	CARBON 2.2K 5% 1/6W		R71	1-247-839-00	CARBON 2.2K 5% 1/6W	
R19	1-214-110-00	METAL 120 1% 1/4W		R72	1-247-839-00	CARBON 2.2K 5% 1/6W	
R20	1-214-116-00	METAL 220 1% 1/4W		R73	1-247-839-00	CARBON 2.2K 5% 1/6W	
R21	1-214-128-00	METAL 680 1% 1/4W		R74	1-247-839-00	CARBON 2.2K 5% 1/6W	
R22	1-247-817-00	CARBON 270 5% 1/6W		R75	1-247-855-00	CARBON 10K 5% 1/6W	
R23	1-247-807-00	CARBON 100 5% 1/6W		R76	1-247-839-00	CARBON 2.2K 5% 1/6W	
R24	1-247-837-00	CARBON 1.8K 5% 1/6W		R77	1-247-867-00	CARBON 33K 5% 1/6W	
R25	1-247-809-00	CARBON 120 5% 1/6W		R78	1-247-807-00	CARBON 100 5% 1/6W	
R26	1-247-839-00	CARBON 2.2K 5% 1/6W		R79	1-247-867-00	CARBON 33K 5% 1/6W	
R28	1-247-852-00	CARBON 7.5K 5% 1/6W		R80	1-247-867-00	CARBON 33K 5% 1/6W	
R29	1-247-843-00	CARBON 3.3K 5% 1/6W		R81	1-247-807-00	CARBON 100 5% 1/6W	
R30	1-247-817-00	CARBON 270 5% 1/6W		R82	1-247-867-00	CARBON 33K 5% 1/6W	
R31	1-247-839-00	CARBON 2.2K 5% 1/6W		R83	1-247-807-00	CARBON 100 5% 1/6W	
R32	1-247-845-00	CARBON 3.9K 5% 1/6W		R84	1-247-807-00	CARBON 100 5% 1/6W	
R33	1-247-827-00	CARBON 680 5% 1/6W		R85	1-247-855-00	CARBON 10K 5% 1/6W	
R34	1-247-847-00	CARBON 4.7K 5% 1/6W		R86	1-247-843-00	CARBON 3.3K 5% 1/6W	
R35	1-247-855-00	CARBON 10K 5% 1/6W		R87	1-247-867-00	CARBON 33K 5% 1/6W	
R36	1-247-829-00	CARBON 820 5% 1/6W		R88	1-247-843-00	CARBON 3.3K 5% 1/6W	
R37	1-247-853-00	CARBON 8.2K 5% 1/6W		R89	1-247-804-00	CARBON 75 5% 1/6W	
R38	1-247-843-00	CARBON 3.3K 5% 1/6W		R90	1-247-855-00	CARBON 10K 5% 1/6W	
R39	1-247-804-00	CARBON 75 5% 1/6W		R91	1-247-839-00	CARBON 2.2K 5% 1/6W	
R40	1-247-887-00	CARBON 220K 5% 1/6W		R201	1-247-855-00	CARBON 10K 5% 1/6W	
R41	1-247-843-00	CARBON 3.3K 5% 1/6W		R202	1-247-851-00	CARBON 6.8K 5% 1/6W	
R42	1-247-855-00	CARBON 10K 5% 1/6W		R203	1-247-883-00	CARBON 150K 5% 1/6W	
R43	1-247-847-00	CARBON 4.7K 5% 1/6W		R204	1-247-863-00	CARBON 22K 5% 1/6W	
R44	1-247-847-00	CARBON 4.7K 5% 1/6W		R205	1-247-847-00	CARBON 4.7K 5% 1/6W	
R45	1-247-853-00	CARBON 8.2K 5% 1/6W		R206	1-247-857-00	CARBON 12K 5% 1/6W	
R46	1-247-826-00	CARBON 620 5% 1/6W		R207	1-247-871-00	CARBON 47K 5% 1/6W	
R47	1-247-855-00	CARBON 10K 5% 1/6W		R208	1-247-873-00	CARBON 56K 5% 1/6W	
R48	1-247-847-00	CARBON 4.7K 5% 1/6W		R209	1-247-879-00	CARBON 100K 5% 1/6W	
R49	1-247-903-00	CARBON 1M 5% 1/6W		R210	1-247-855-00	CARBON 10K 5% 1/6W	
R50	1-247-831-00	CARBON 1K 5% 1/6W		R301	1-247-835-00	CARBON 1.5K 5% 1/6W	
R51	1-247-855-00	CARBON 10K 5% 1/6W		R302	1-247-813-00	CARBON 180 5% 1/6W	
R52	1-247-831-00	CARBON 1K 5% 1/6W		R303	1-247-839-00	CARBON 2.2K 5% 1/6W	
				R304	1-247-839-00	CARBON 2.2K 5% 1/6W	

F

CR

CG

Ref.No.	Part No.	Description	Remark
R305	1-247-837-00	CARBON 1.8K 5% 1/6W	
R306	1-247-807-00	CARBON 100 5% 1/6W	
R307	1-247-881-00	CARBON 120K 5% 1/6W	
R308	1-247-855-00	CARBON 10K 5% 1/6W	
R309	1-247-851-00	CARBON 6.8K 5% 1/6W	
R310	1-247-851-00	CARBON 6.8K 5% 1/6W	
R311	1-247-881-00	CARBON 120K 5% 1/6W	
R312	1-247-877-00	CARBON 82K 5% 1/6W	
R313	1-244-943-00	CARBON 820K 5% 1/2W	
R315	1-247-649-00	CARBON 2.2 5% 1/4W F	

CRYSTAL

X1	1-527-396-00	CRYSTAL, OSC	
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▲:A-1330-408-A CR BOARD, COMPLETE

▲:1-609-360-00 CR BOARD
1-526-767-00 SOCKET, CRT
1-556-880-51 LEAD ASSY, HIGH-VOLTAGE

CAPACITOR

C1	1-123-331-00	ELECT 33MF 20% 25V	
C2	1-123-028-00	ELECT 2.2MF 350V	
C3	1-102-050-00	CERAMIC 0.01MF 500V	
C4	1-102-155-00	CERAMIC 330PF 20% 2KV	
C5	1-102-155-00	CERAMIC 330PF 20% 2KV	
C6	1-102-155-00	CERAMIC 330PF 20% 2KV	

CONNECTOR

CR1	▲:1-508-784-00	1P PLUG	
CR2	▲:1-508-786-00	2P PLUG (M)	
CR3	▲:1-560-466-00	PIN, CONNECTOR 3P	
CR4	▲:1-560-469-00	PIN, CONNECTOR 6P	

DIODE

D1	8-719-911-19	DIODE 1SS119	
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COIL

L1	1-407-701-00	MICRO INDUCTOR 47UH	
L2	1-407-364-00	COIL, SPOOK CHOKE	
L3	1-407-364-00	COIL, SPOOK CHOKE	
L4	1-407-694-00	MICRO INDUCTOR 12UH	

NEON LAMP

NL1	1-519-013-13	DISCHARGE TUBE	
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TRANSISTOR

Q1	8-729-322-78	TRANSISTOR 2SC2278	
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Ref.No.	Part No.	Description	Remark
RESISTOR			
R1	1-246-449-00	CARBON 100 5% 1/4W	
R2	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R3	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R4	1-246-449-00	CARBON 100 5% 1/4W	
R5	1-202-836-00	SOLID 56K 10% 1/2W	
R6	1-202-557-00	SOLID 220 5% 1/2W	
R7	1-202-823-11	SOLID 2.7K 10% 1/2W	
R8	1-202-847-00	SOLID 560K 10% 1/2W	
R9	1-202-842-11	SOLID 220K 10% 1/2W	
R10	1-202-818-00	SOLID 1K 10% 1/2W	

R11	▲:SOLID	1/2W	
R12	▲:SOLID	1/2W	
R13	▲:SOLID	1/2W	

SPARK GAP

SG1	1-519-063-XX	DISCHARGING GAP	
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▲:A-1330-409-A CG BOARD, COMPLETE

▲:1-609-359-00 CG BOARD
1-526-767-00 SOCKET, CRT
1-556-880-51 LEAD ASSY, HIGH-VOLTAGE

CAPACITOR

C1	1-123-331-00	ELECT 33MF 20% 25V	
C2	1-123-028-00	ELECT 2.2MF 350V	
C3	1-102-050-00	CERAMIC 0.01MF 500V	
C4	1-102-155-00	CERAMIC 330PF 20% 2KV	
C5	1-102-155-00	CERAMIC 330PF 20% 2KV	
C6	1-102-155-00	CERAMIC 330PF 20% 2KV	

CONNECTOR

CG1	▲:1-508-784-00	1P PLUG	
CG2	▲:1-508-786-00	2P PLUG (M)	
CG3	▲:1-560-466-00	PIN, CONNECTOR 3P	
CG4	▲:1-560-469-00	PIN, CONNECTOR 6P	

DIODE


D1	8-719-911-19	DIODE 1SS119	
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COIL

L1	1-407-701-00	MICRO INDUCTOR 47UH	
L2	1-407-364-00	COIL, SPOOK CHOKE	
L3	1-407-364-00	COIL, SPOOK CHOKE	
L4	1-407-694-00	MICRO INDUCTOR 12UH	

NEON LAMP

NL1	1-519-013-13	DISCHARGE TUBE	
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• The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

CG
CB
EB
DB

Ref.No.	Part No.	Description	Remark
<u>TRANSISTOR</u>			
Q1	8-729-322-78	TRANSISTOR 2SC2278	
<u>RESISTOR</u>			
R1	1-246-449-00	CARBON 100 5% 1/4W	
R2	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R3	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R4	1-246-449-00	CARBON 100 5% 1/4W	
R5	1-202-836-00	SOLID 56K 10% 1/2W	
R6	1-202-557-00	SOLID 220 5% 1/2W	
R7	1-202-823-11	SOLID 2.7K 10% 1/2W	
R8	1-202-847-00	SOLID 560K 10% 1/2W	
R9	1-202-842-11	SOLID 220K 10% 1/2W	
R10	1-202-818-00	SOLID 1K 10% 1/2W	
R11	△	SOLID 1/2W	
R12	△	SOLID 1/2W	
R13	△	SOLID 1/2W	
<u>SPARK GAP</u>			
SG1	1-519-063-XX	DISCHARGING GAP	

△:A-1330-410-A CB BOARD, COMPLETE			

△:1-609-358-00 CB BOARD			
1-526-767-00 SOCKET, CRT			
1-556-880-51 LEAD ASSY, HIGH-VOLTAGE			
<u>CAPACITOR</u>			
C1	1-123-331-00	ELECT 33MF 20% 25V	
C2	1-123-028-00	ELECT 2.2MF 350V	
C3	1-102-050-00	CERAMIC 0.01MF 500V	
C4	1-102-155-00	CERAMIC 330PF 20% 2KV	
C5	1-102-155-00	CERAMIC 330PF 20% 2KV	
C6	1-102-155-00	CERAMIC 330PF 20% 2KV	
<u>CONNECTOR</u>			
CB1	△:1-508-784-00	1P PLUG	
CB2	△:1-508-786-00	2P PLUG (M)	
CB3	△:1-560-466-00	PIN, CONNECTOR 3P	
CB4	△:1-560-469-00	PIN, CONNECTOR 6P	
<u>DIODE</u>			
D1	8-719-911-19	DIODE 1SS119	
<u>COIL</u>			
L1	1-407-701-00	MICRO INDUCTOR 47UH	
L2	1-407-364-00	COIL, SPOOK CHOKE	
L3	1-407-364-00	COIL, SPOOK CHOKE	
L4	1-407-694-00	MICRO INDUCTOR 12UH	

Ref.No.	Part No.	Description	Remark
<u>NEON LAMP</u>			
NL1	1-519-013-13	DISCHARGE TUBE	
<u>TRANSISTOR</u>			
Q1	8-729-322-78	TRANSISTOR 2SC2278	
<u>RESISTOR</u>			
R1	1-246-449-00	CARBON 100 5% 1/4W	
R2	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R3	1-206-751-00	METAL OXIDE 12K 5% 3W F	
R4	1-246-449-00	CARBON 100 5% 1/4W	
R5	1-202-836-00	SOLID 56K 10% 1/2W	
R6	1-202-557-00	SOLID 220 5% 1/2W	
R7	1-202-823-11	SOLID 2.7K 10% 1/2W	
R8	1-202-847-00	SOLID 560K 10% 1/2W	
R9	1-202-842-11	SOLID 220K 10% 1/2W	
R10	1-202-818-00	SOLID 1K 10% 1/2W	
R11	△	SOLID 1/2W	
R12	△	SOLID 1/2W	
R13	△	SOLID 1/2W	
<u>SPARK GAP</u>			
SG1	1-519-063-XX	DISCHARGING GAP	

△:1-609-364-00 EB BOARD			

<u>CONNECTOR</u>			
EB1	△:1-506-348-XX	3P PLUG (L)	
<u>TRANSFORMER</u>			
T1	△:1-439-316-00	TRANSFORMER, FEKRITE (LOT)	

△:1-610-154-00 DB BOARD			

<u>TRANSISTOR</u>			
Q7	8-729-313-82	TRANSISTOR 2SD1138	
Q8	8-729-386-12	TRANSISTOR 2SB861	
Q11	8-729-313-82	TRANSISTOR 2SD1138	
Q12	8-729-386-12	TRANSISTOR 2SB861	
Q15	8-729-313-82	TRANSISTOR 2SD1138	

• The components identified by **△** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.

The components identified by shading and mark **△** are critical for safety. Replace only with part number specified.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q16	8-729-386-12	TRANSISTOR 2SB861		C31	1-108-567-00	MYLAR 0.0033MF 5% 50V	
Q24	8-729-316-16	TRANSISTOR 2SC1061		C32	1-123-356-00	ELECT 10MF 20% 25V	
Q25	8-729-315-63	TRANSISTOR 2SB856		C33	1-123-336-00	ELECT 470MF 20% 25V	
Q26	8-729-316-16	TRANSISTOR 2SC1061		C35	1-102-973-00	CERAMIC 100PF 5% 50V	
Q27	8-729-315-63	TRANSISTOR 2SB856		C36	1-102-973-00	CERAMIC 100PF 5% 50V	
Q28	8-729-316-16	TRANSISTOR 2SC1061		C37	1-102-973-00	CERAMIC 100PF 5% 50V	
Q29	8-729-315-63	TRANSISTOR 2SB856		C38	1-102-973-00	CERAMIC 100PF 5% 50V	
*****				C39	1-102-973-00	CERAMIC 100PF 5% 50V	
▲:1-610-155-00 ED BOARD				C40	1-102-973-00	CERAMIC 100PF 5% 50V	
*****				C41	1-123-321-00	ELECT 220MF 20% 16V	
CONNECTOR				C43	1-101-006-00	CERAMIC 0.047MF 50V	
ED1	▲:1-506-371-00	2P PLUG (L)		C44	1-101-006-00	CERAMIC 0.047MF 50V	
COIL				C45	1-123-356-00	ELECT 10MF 20% 25V	
L1	▲:1-421-591-11	COIL, CHOKE		C46	1-123-356-00	ELECT 10MF 20% 25V	
*****				C47	1-123-356-00	ELECT 10MF 20% 25V	
▲:A-1340-560-A D BOARD, COMPLETE				C48	1-123-356-00	ELECT 10MF 20% 25V	
*****				C49	1-108-595-00	MYLAR 0.047MF 5% 50V	
CAPACITOR				C50	1-108-421-00	MYLAR 0.01MF 10% 200V	
C1	1-123-333-00	ELECT 100MF 20% 16V		C51	1-108-595-00	MYLAR 0.047MF 5% 50V	
C3	1-123-586-00	ELECT 0.1MF 20% 50V		C52	1-108-421-00	MYLAR 0.01MF 10% 200V	
C4	1-123-333-00	ELECT 100MF 20% 16V		C53	1-108-595-00	MYLAR 0.047MF 5% 50V	
C5	1-123-586-00	ELECT 0.1MF 20% 50V		C54	1-108-421-00	MYLAR 0.01MF 10% 200V	
C6	1-123-356-00	ELECT 10MF 20% 16V		C55	1-108-429-00	MYLAR 0.047MF 10% 200V	
C7	1-101-361-00	CERAMIC 150PF 5% 50V		C56	1-108-579-00	MYLAR 0.01MF 5% 50V	
C8	1-108-251-00	MYLAR 0.1MF 5% 50V		C57	1-131-371-00	TANTALUM 10MF 10% 16V	
C9	1-123-318-00	ELECT 33MF 20% 16V		C58	1-108-567-00	MYLAR 0.0033MF 5% 50V	
C10	1-102-820-00	CERAMIC 330PF 5% 50V		C59	1-123-381-00	ELECT 2.2MF 20% 50V	
C11	1-108-579-00	MYLAR 0.01MF 5% 50V		C60	1-123-369-00	ELECT 4.7MF 20% 50V	
C12	1-123-333-00	ELECT 100MF 20% 16V		C61	1-130-022-00	FILM 0.0022MF 5% 50V	
C13	1-123-333-00	ELECT 100MF 20% 16V		C62	1-123-356-00	ELECT 10MF 20% 16V	
C14	1-101-006-00	CERAMIC 0.047MF 50V		C63	1-123-356-00	ELECT 10MF 20% 16V	
C15	1-123-356-00	ELECT 10MF 20% 16V		C64	1-108-587-00	MYLAR 0.022MF 5% 50V	
C16	1-123-356-00	ELECT 10MF 20% 16V		C65	1-108-251-00	MYLAR 0.1MF 5% 50V	
C17	1-123-333-00	ELECT 100MF 20% 16V		C66	1-102-973-00	CERAMIC 100PF 5% 50V	
C18	1-101-006-00	CERAMIC 0.047MF 50V		C67	1-123-381-00	ELECT 2.2MF 20% 50V	
C19	1-123-333-00	ELECT 100MF 20% 16V		C68	1-123-381-00	ELECT 2.2MF 20% 50V	
C20	1-123-333-00	ELECT 100MF 20% 16V		C69	1-123-354-00	ELECT 3.3MF 20% 50V	
C21	1-123-333-00	ELECT 100MF 20% 16V		C70	1-123-354-00	ELECT 3.3MF 20% 50V	
C22	1-123-356-00	ELECT 10MF 20% 16V		C71	1-108-579-00	MYLAR 0.01MF 5% 50V	
C23	1-123-333-00	ELECT 100MF 20% 16V		C72	1-123-321-00	ELECT 220MF 20% 16V	
C24	1-123-356-00	ELECT 10MF 20% 16V		C73	1-108-555-00	MYLAR 0.001MF 5% 50V	
C25	1-123-333-00	ELECT 100MF 20% 16V		C74	1-108-567-00	MYLAR 0.0033MF 5% 50V	
C26	1-123-322-00	ELECT 330MF 20% 16V		C75	1-108-579-00	MYLAR 0.01MF 5% 50V	
C27	1-102-824-00	CERAMIC 470PF 5% 50V		C76	1-123-379-00	ELECT 0.47MF 20% 50V	
C28	1-108-563-00	MYLAR 0.0022MF 5% 50V		C77	1-108-591-00	MYLAR 0.033MF 5% 50V	
C29	1-108-563-00	MYLAR 0.0022MF 5% 50V		C78	1-108-555-00	MYLAR 0.001MF 5% 50V	
C30	1-108-563-00	MYLAR 0.0022MF 5% 50V		C79	1-102-523-00	CERAMIC 56PF 5% 50V	
				C80	1-102-971-00	CERAMIC 82PF 5% 50V	
				C81	1-101-006-00	CERAMIC 0.047MF 50V	
				C82	1-101-006-00	CERAMIC 0.047MF 50V	
				C83	1-101-006-00	CERAMIC 0.047MF 50V	
				C84	1-101-006-00	CERAMIC 0.047MF 50V	
				C85	1-102-824-00	CERAMIC 470PF 5% 50V	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q34	8-729-316-16	TRANSISTOR 25C1061		R54	1-214-084-00	METAL 10 1% 1/4W	
Q35	8-729-315-63	TRANSISTOR 25B856		R55	1-214-084-00	METAL 10 1% 1/4W	
RESISTOR				R56	1-214-164-00	METAL 22K 1% 1/4W	
R1	1-247-819-00	CARBON 330 5% 1/6W		R57	1-213-138-00	METAL OXIDE 390 5% 1W F	
R2	1-247-855-00	CARBON 10K 5% 1/6W		R58	1-213-138-00	METAL OXIDE 390 5% 1W F	
R3	1-213-135-00	METAL OXIDE 220 5% 1W F		R59	1-213-138-00	METAL OXIDE 390 5% 1W F	
R4	1-213-135-00	METAL OXIDE 220 5% 1W		R60	1-214-088-00	METAL 15 1% 1/4W	
R5	1-247-819-00	CARBON 330 5% 1/6W		R61	1-214-088-00	METAL 15 1% 1/4W	
R6	1-247-855-00	CARBON 10K 5% 1/6W		R62	1-214-088-00	METAL 15 1% 1/4W	
R7	1-247-855-00	CARBON 10K 5% 1/6W		R63	1-214-088-00	METAL 15 1% 1/4W	
R8	1-247-843-00	CARBON 3.3K 5% 1/6W		R64	1-214-164-00	METAL 22K 1% 1/4W	
R10	1-247-855-00	CARBON 10K 5% 1/6W		R65	1-214-132-00	METAL 1K 1% 1/4W	
R11	1-247-855-00	CARBON 10K 5% 1/6W		R66	1-214-132-00	METAL 1K 1% 1/4W	
R12	1-214-156-00	METAL 10K 1% 1/4W		R67	1-214-088-00	METAL 15 1% 1/4W	
R13	1-214-156-00	METAL 10K 1% 1/4W		R68	1-214-088-00	METAL 15 1% 1/4W	
R14	1-214-126-00	METAL 560 1% 1/4W		R69	1-214-088-00	METAL 15 1% 1/4W	
R15	1-214-156-00	METAL 10K 1% 1/4W		R70	1-214-088-00	METAL 15 1% 1/4W	
R16	1-214-136-00	METAL 1.5K 1% 1/4W		R71	1-214-164-00	METAL 22K 1% 1/4W	
R17	1-214-108-00	METAL 100 1% 1/4W		R72	1-214-152-00	METAL 6.8K 1% 1/4W	
R18	1-247-855-00	CARBON 10K 5% 1/6W		R73	1-214-088-00	METAL 15 1% 1/4W	
R19	1-214-156-00	METAL 10K 1% 1/4W		R74	1-214-088-00	METAL 15 1% 1/4W	
R20	1-214-156-00	METAL 10K 1% 1/4W		R75	1-214-088-00	METAL 15 1% 1/4W	
R22	1-214-971-00	METAL 2M 1% 1/4W		R76	1-214-088-00	METAL 15 1% 1/4W	
R23	1-247-879-00	CARBON 100K 5% 1/6W		R77	1-214-164-00	METAL 22K 1% 1/4W	
R24	1-247-859-00	CARBON 15K 5% 1/6W		R78	1-214-132-00	METAL 1K 1% 1/4W	
R26	1-214-139-00	METAL 2K 1% 1/4W		R79	1-214-156-00	METAL 10K 1% 1/4W	
R27	1-214-128-00	METAL 680 1% 1/4W		R80	1-214-156-00	METAL 10K 1% 1/4W	
R28	1-247-887-00	CARBON 220K 5% 1/6W		R81	1-214-128-00	METAL 680 1% 1/4W	
R29	1-214-162-00	METAL 18K 1% 1/4W		R82	1-247-807-00	CARBON 100 5% 1/6W	
R30	1-214-124-00	METAL 470 1% 1/4W		R83	1-247-807-00	CARBON 100 5% 1/6W	
R31	1-214-140-00	METAL 2.2K 1% 1/4W		R84	1-206-753-00	METAL OXIDE 15K 5% 3W F	
R32	1-214-128-00	METAL 680 1% 1/4W		R85	1-247-783-00	CARBON 10 5% 1/6W	
R33	1-247-887-00	CARBON 220K 5% 1/6W		R86	1-213-155-00	METAL OXIDE 10K 5% 1W F	
R34	1-214-162-00	METAL 18K 1% 1/4W		R87	1-212-489-00	METAL 15 1% 1/2W	
R35	1-214-124-00	METAL 470 1% 1/4W		R88	1-212-489-00	METAL 15 1% 1/2W	
R36	1-246-446-00	CARBON 75 5% 1/4W		R89	1-212-489-00	METAL 15 1% 1/2W	
R38	1-213-135-00	METAL OXIDE 220 5% 1W F		R90	1-212-489-00	METAL 15 1% 1/2W	
R39	1-213-135-00	METAL OXIDE 220 5% 1W F		R91	1-214-152-00	METAL 6.8K 1% 1/4W	
R40	1-214-084-00	METAL 10 1% 1/4W		R92	1-214-156-00	METAL 10K 1% 1/4W	
R41	1-214-084-00	METAL 10 1% 1/4W		R93	1-214-156-00	METAL 10K 1% 1/4W	
R42	1-214-084-00	METAL 10 1% 1/4W		R94	1-214-128-00	METAL 680 1% 1/4W	
R43	1-214-084-00	METAL 10 1% 1/4W		R95	1-247-807-00	CARBON 100 5% 1/6W	
R44	1-214-132-00	METAL 1K 1% 1/4W		R96	1-247-807-00	CARBON 100 5% 1/6W	
R45	1-214-164-00	METAL 22K 1% 1/4W		R97	1-206-753-00	METAL OXIDE 15K 5% 3W F	
R46	1-214-084-00	METAL 10 1% 1/4W		R98	1-247-783-00	CARBON 10 5% 1/6W	
R47	1-214-132-00	METAL 1K 1% 1/4W		R99	1-213-155-00	METAL OXIDE 10K 5% 1W F	
R48	1-214-084-00	METAL 10 1% 1/4W		R100	1-212-489-00	METAL 15 1% 1/2W	
R49	1-214-084-00	METAL 10 1% 1/4W		R101	1-212-489-00	METAL 15 1% 1/2W	
R50	1-214-084-00	METAL 10 1% 1/4W		R102	1-212-489-00	METAL 15 1% 1/2W	
R51	1-214-164-00	METAL 22K 1% 1/4W		R103	1-212-489-00	METAL 15 1% 1/2W	
R52	1-214-084-00	METAL 10 1% 1/4W		R104	1-214-152-00	METAL 6.8K 1% 1/4W	
R53	1-214-084-00	METAL 10 1% 1/4W		R105	1-214-156-00	METAL 10K 1% 1/4W	
				R106	1-214-156-00	METAL 10K 1% 1/4W	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R107	1-214-128-00	METAL	680 1% 1/4W	R164	1-247-030-11	CARBON	18 5% 1/8W F
R108	1-247-855-00	CARBON	10K 5% 1/6W	R165	1-214-180-00	METAL	100K 1% 1/4W
R109	1-214-784-00	METAL	200K 1% 1/4W	R166	1-247-955-00	CARBON	10K 5% 1/6W
R110	1-206-753-00	METAL OXIDE	15K 5% 3W F	R167	1-214-180-00	METAL	100K 1% 1/4W
R111	1-247-783-00	CARBON	10 5% 1/6W	R168	1-214-156-00	METAL	10K 1% 1/4W
R112	1-213-155-00	METAL OXIDE	10K 5% 1W F	R169	1-214-172-00	METAL	47K 1% 1/4W
R113	1-212-489-00	METAL	15 1% 1/2W	R170	1-214-172-00	METAL	47K 1% 1/4W
R114	1-212-489-00	METAL	15 1% 1/2W	R171	1-214-162-00	METAL	18K 1% 1/4W
R115	1-212-489-00	METAL	15 1% 1/2W	R172	1-214-156-00	METAL	10K 1% 1/4W
R116	1-212-489-00	METAL	15 1% 1/2W	R173	1-214-168-00	METAL	33K 1% 1/4W
R118	1-214-179-00	METAL	91K 1% 1/4W	R174	1-214-180-00	METAL	100K 1% 1/4W
R119	1-214-179-00	METAL	91K 1% 1/4W	R176	1-214-172-00	METAL	47K 1% 1/4W
R120	1-214-166-00	METAL	27K 1% 1/4W	R177	1-214-172-00	METAL	47K 1% 1/4W
R121	1-214-166-00	METAL	27K 1% 1/4W	R181	1-214-132-00	METAL	1K 1% 1/4W
R122	1-214-179-00	METAL	91K 1% 1/4W	R182	1-247-855-00	CARBON	10K 5% 1/6W
R123	1-214-166-00	METAL	27K 1% 1/4W	R183	1-214-180-00	METAL	100K 1% 1/4W
R124	1-214-138-00	METAL	1.8K 1% 1/4W	R184	1-247-855-00	CARBON	10K 5% 1/6W
R125	1-214-138-00	METAL	1.8K 1% 1/4W	R185	1-214-180-00	METAL	100K 1% 1/4W
R126	1-214-172-00	METAL	47K 1% 1/4W	R186	1-247-855-00	CARBON	10K 5% 1/6W
R127	1-214-172-00	METAL	47K 1% 1/4W	R187	1-214-172-00	METAL	47K 1% 1/4W
R128	1-214-138-00	METAL	1.8K 1% 1/4W	R188	1-214-172-00	METAL	47K 1% 1/4W
R130	1-214-154-00	METAL	8.2K 1% 1/4W	R189	1-247-855-00	CARBON	10K 5% 1/6W
R131	1-214-154-00	METAL	8.2K 1% 1/4W	R190	1-247-855-00	CARBON	10K 5% 1/6W
R132	1-214-154-00	METAL	8.2K 1% 1/4W	R191	1-214-180-00	METAL	100K 1% 1/4W
R133	1-214-174-00	METAL	56K 1% 1/4W	R192	1-214-180-00	METAL	100K 1% 1/4W
R134	1-214-164-00	METAL	22K 1% 1/4W	R193	1-247-835-00	CARBON	1.5K 5% 1/6W
R135	1-214-784-00	METAL	200K 1% 1/4W	R194	1-214-172-00	METAL	47K 1% 1/4W
R136	1-214-164-00	METAL	22K 1% 1/4W	R195	1-247-857-00	CARBON	12K 5% 1/6W
R137	1-214-784-00	METAL	200K 1% 1/4W	R196	1-247-831-00	CARBON	1K 5% 1/6W
R138	1-214-166-00	METAL	27K 1% 1/4W	R197	1-214-172-00	METAL	47K 1% 1/4W
R139	1-214-175-00	METAL	62K 1% 1/4W	R198	1-247-867-00	CARBON	33K 5% 1/6W
R140	1-214-166-00	METAL	27K 1% 1/4W	R199	1-247-809-00	CARBON	120 5% 1/6W
R141	1-214-175-00	METAL	62K 1% 1/4W	R200	1-247-877-00	CARBON	82K 5% 1/6W
R142	1-214-164-00	METAL	22K 1% 1/4W	R201	1-247-843-00	CARBON	3.3K 5% 1/6W
R145	1-214-172-00	METAL	47K 1% 1/4W	R202	1-247-877-00	CARBON	82K 5% 1/6W
R146	1-214-172-00	METAL	47K 1% 1/4W	R203	1-247-868-00	CARBON	36K 5% 1/6W
R147	1-214-168-00	METAL	33K 1% 1/4W	R204	1-247-867-00	CARBON	33K 5% 1/6W
R148	1-214-168-00	METAL	33K 1% 1/4W	R205	1-247-867-00	CARBON	33K 5% 1/6W
R149	1-214-180-00	METAL	100K 1% 1/4W	R206	1-247-855-00	CARBON	10K 5% 1/6W
R150	1-214-180-00	METAL	100K 1% 1/4W	R207	1-247-369-00	CARBON	39K 5% 1/6W
R151	1-214-160-00	METAL	15K 1% 1/4W	R208	1-247-855-00	CARBON	10K 5% 1/6W
R152	1-214-160-00	METAL	15K 1% 1/4W	R211	1-247-863-00	CARBON	22K 5% 1/6W
R153	1-214-162-00	METAL	18K 1% 1/4W	R212	1-247-873-00	CARBON	56K 5% 1/6W
R154	1-214-160-00	METAL	15K 1% 1/4W	R213	1-247-857-00	CARBON	12K 5% 1/6W
R155	1-214-168-00	METAL	33K 1% 1/4W	R214	1-247-839-00	CARBON	2.2K 5% 1/6W
R156	1-214-156-00	METAL	10K 1% 1/4W	R215	1-247-831-00	CARBON	1K 5% 1/6W
R157	1-214-168-00	METAL	33K 1% 1/4W	R216	1-247-807-00	CARBON	100 5% 1/6W
R158	1-214-171-00	METAL	43K 1% 1/4W	R217	1-247-855-00	CARBON	10K 5% 1/6W
R159	1-214-172-00	METAL	47K 1% 1/4W	R218	1-247-831-00	CARBON	1K 5% 1/6W
R160	1-214-172-00	METAL	47K 1% 1/4W	R219	1-247-855-00	CARBON	10K 5% 1/6W
R161	1-214-168-00	METAL	33K 1% 1/4W	R221	1-247-857-00	CARBON	12K 5% 1/6W
R162	1-214-176-00	METAL	68K 1% 1/4W	R222	1-247-831-00	CARBON	1K 5% 1/6W
R163	1-247-783-00	CARBON	10 5% 1/8W F	R223	1-247-863-00	CARBON	22K 5% 1/6W

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Ref.No.Part No.	Description	Remark	Ref.No.Part No.	Description	Remark
R224	1-247-871-00 CARBON	47K 5% 1/6W	R299	1-247-819-00 CARBON	330 5% 1/6W
R225	1-247-807-00 CARBON	100 5% 1/6W	R300	1-247-819-00 CARBON	330 5% 1/6W
R226	1-214-156-00 METAL	10K 1% 1/4W	R301	1-247-807-00 CARBON	100 5% 1/6W
R227	1-214-156-00 METAL	10K 1% 1/4W	R302	1-247-807-00 CARBON	100 5% 1/6W
R228	1-214-156-00 METAL	10K 1% 1/4W	R305	1-247-819-00 CARBON	330 5% 1/6W
R229	1-214-156-00 METAL	10K 1% 1/4W	VARIABLE RESISTOR		
R230	1-214-784-00 METAL	200K 1% 1/4W	RV1	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R231	1-247-807-00 CARBON	100 5% 1/6W	RV2	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R232	1-214-163-00 METAL	20K 1% 1/4W	RV3	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R233	1-214-163-00 METAL	20K 1% 1/4W	RV4	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R234	1-247-855-00 CARBON	10K 5% 1/6W	RV5	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R235	1-247-871-00 CARBON	47K 5% 1/6W	RV6	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R236	1-210-859-00 CARBON	1.2 5% 1/8W F	RV7	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R237	1-210-859-00 CARBON	1.2 5% 1/8W F	RV8	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R241	1-247-857-00 CARBON	12K 5% 1/6W	RV9	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R242	1-247-849-00 CARBON	5.6K 5% 1/6W	RV10	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R243	1-247-851-00 CARBON	6.8K 5% 1/6W	RV11	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R244	1-247-831-00 CARBON	1K 5% 1/6W	RV12	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R245	1-247-857-00 CARBON	12K 5% 1/6W	RV13	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R246	1-247-849-00 CARBON	5.6K 5% 1/6W	RV14	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R247	1-247-851-00 CARBON	6.8K 5% 1/6W	RV15	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R248	1-247-831-00 CARBON	1K 5% 1/6W	RV16	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R249	1-213-135-00 METAL OXIDE	220 5% 1W F	RV17	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R252	1-214-180-00 METAL	100K 1% 1/4W	RV18	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R253	1-247-835-00 CARBON	1.5K 5% 1/6W	RV19	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R255	1-247-841-00 CARBON	2.7K 5% 1/6W	RV20	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R257	1-212-489-00 METAL	15 1% 1/2W	RV21	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R258	1-212-489-00 METAL	15 1% 1/2W	RV22	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R259	1-212-489-00 METAL	15 1% 1/2W	RV23	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R260	1-212-489-00 METAL	15 1% 1/2W	RV24	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R261	1-212-489-00 METAL	15 1% 1/2W	RV25	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R262	1-212-489-00 METAL	15 1% 1/2W	RV26	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R268	1-214-168-00 METAL	33K 1% 1/4W	RV27	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R269	1-247-843-00 CARBON	3.3K 5% 1/6W	RV28	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R270	1-247-807-00 CARBON	100 5% 1/6W	RV29	1-224-251-XX RES, ADJ, METAL GLAZE	4.7K
R271	1-247-807-00 CARBON	100 5% 1/6W	RV30	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R274	1-247-819-00 CARBON	330 5% 1/6W	RV31	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R276	1-247-807-00 CARBON	100 5% 1/6W	RV32	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R277	1-247-807-00 CARBON	100 5% 1/6W	RV33	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R278	1-214-139-00 METAL	2K 1% 1/4W	RV34	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R279	1-214-139-00 METAL	2K 1% 1/4W	RV35	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R280	1-214-150-00 METAL	5.6K 1% 1/4W	RV36	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R282	1-214-132-00 METAL	1K 1% 1/4W	RV37	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R283	1-247-807-00 CARBON	100 5% 1/6W	RV38	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R284	1-247-807-00 CARBON	100 5% 1/6W	RV39	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R287	1-247-819-00 CARBON	330 5% 1/6W	RV40	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R289	1-247-807-00 CARBON	100 5% 1/6W	RV41	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R290	1-247-807-00 CARBON	100 5% 1/6W	RV42	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R293	1-247-819-00 CARBON	330 5% 1/6W	RV43	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R295	1-247-807-00 CARBON	100 5% 1/6W	RV44	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R296	1-247-807-00 CARBON	100 5% 1/6W	RV45	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R297	1-214-158-00 METAL	12K 1% 1/4W	RV46	1-224-253-XX RES, ADJ, METAL GLAZE	22K
R298	1-214-139-00 METAL	2K 1% 1/4W			

D E c E

Ref.No.	Part No.	Description	Remark
RV47	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV48	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K	
RV50	1-224-254-XX	RES, ADJ, METAL GLAZE 47K	
RV51	1-224-254-XX	RES, ADJ, METAL GLAZE 47K	
<u>SWITCH</u>			
SW1	1-553-537-00	SWITCH, SLIDE	
SW2	1-553-537-00	SWITCH, SLIDE	
SW3	1-553-537-00	SWITCH, SLIDE	
SW4	1-553-537-00	SWITCH, SLIDE	
SW6	1-553-537-00	SWITCH, SLIDE	
SW7	1-554-320-00	SWITCH, SLIDE	
SW8	1-554-319-00	SWITCH, SLIDE	

▲:1-610-184-00	EC BOARD	*****	
▲:1-533-146-00	HOLDER, FUSE		
<u>CONNECTOR</u>			
C1	1-123-028-00	ELECT 2.2MF	350V
C2	1-123-325-00	ELECT 2200MF	20% 16V
C3	1-123-974-00	ELECT 2200MF	20% 16V
C6	1-108-427-00	MYLAR 0.033MF	10% 200V
C7	1-121-246-00	ELECT 4.7MF	160V
<u>DIODE</u>			
D1	8-719-901-19	DIODE V11N	
D2	8-719-301-51	DIODE S-15H	
D3	8-719-301-51	DIODE S-15H	
D6	8-719-301-51	DIODE S-15H	
D7	8-719-301-51	DIODE S-15H	
<u>CONNECTOR</u>			
EC1	▲:1-560-468-00	PIN, CONNECTOR 5P	
EC2	▲:1-560-467-00	PIN, CONNECTOR 4P	
EC3	▲:1-560-469-00	PIN, CONNECTOR 6P	
EC4	▲:1-560-469-00	PIN, CONNECTOR 6P	
EC5	▲:1-560-469-00	PIN, CONNECTOR 6P	
<u>FUSE</u>			
F1	▲:1-532-555-00	FUSE, GLASS TUBE 1.6A	125V
<u>COIL</u>			
L1	1-459-104-00	COIL, DUST CORE	
L2	1-459-104-00	COIL, DUST CORE	
<u>RESISTOR</u>			
R1	1-244-937-00	CARBON 470K 5%	1/2W
R2	1-206-449-00	METAL OXIDE 2.7 5%	2W F
R3	1-206-692-00	METAL OXIDE 15K 5%	2W F

Ref.No.	Part No.	Description	Remark
▲:A-1340-578-A	E BOARD, COMPLETE	*****	
<u>CAPACITOR</u>			
C1	1-124-494-00	ELECT 33MF	20% 160V
C4	1-123-337-00	ELECT 100QMF	20% 25V
C6	1-123-379-00	ELECT 0.47MF	20% 50V
C7	1-102-973-00	CERAMIC 100PF	5% 50V
C8	1-102-244-00	CERAMIC 220PF	10% 500V
C9	1-121-999-00	ELECT 10MF	160V
C10	1-123-379-00	ELECT 0.47MF	20% 50V
C11	1-102-973-00	CERAMIC 100PF	5% 50V
C12	1-102-244-00	CERAMIC 220PF	10% 500V
C13	1-121-999-00	ELECT 10MF	160V
C14	1-123-253-00	ELECT 22MF	160V
C15	▲:1-130-001-00	FILM 0.009MF	5% 1.5KV
C16	1-124-493-00	ELECT 1MF	20% 160V
C17	1-130-330-00	FILM 1.4MF	5% 200V
C18	1-130-330-00	FILM 1.4MF	5% 200V
C19	1-123-985-51	ELECT 1000MF	20% 16V
C20	▲:1-129-911-00	FILM 0.001MF	5% 1.5KV
C21	1-123-024-00	ELECT 33MF	160V
C23	1-108-907-00	MYLAR 2.2MF	10% 200V
C25	▲:1-108-546-21	MYLAR 1.5MF	10% 400V
C26	▲:1-129-886-51	FILM 0.0068MF	5% 1.5KV
C27	1-125-195-00	ELECT 4.7MF	100V
C28	1-124-041-51	ELECT 220MF	20% 16V
C29	1-108-563-00	MYLAR 0.0022MF	5% 50V
C30	1-124-039-51	ELECT 10MF	20% 16V
C31	1-123-973-00	ELECT 100MF	20% 16V
C32	1-123-329-00	ELECT 10MF	20% 25V
C33	1-108-583-00	MYLAR 0.015MF	5% 50V
C34	1-124-035-00	ELECT 47MF	20% 16V
C35	1-102-947-00	CERAMIC 10PF	5% 50V
C36	1-123-356-00	ELECT 10MF	20% 16V
C38	▲:1-108-546-21	MYLAR 1.5MF	10% 400V
C39	1-108-694-61	MYLAR 0.015MF	10% 200V
C40	1-108-704-61	MYLAR 0.1MF	10% 200V
C41	1-123-359-00	ELECT 47MF	20% 50V
C42	1-123-318-00	ELECT 33MF	20% 16V
<u>DIODE</u>			
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-305-15	DIODE GH3F	
D4	8-719-928-08	DIODE ERD28-08	
D5	8-719-305-15	DIODE GH3F	
D6	8-719-100-57	DIODE RD10E-B2	
D7	8-719-300-45	DIODE EM1Z	
D8	8-719-305-15	DIODE GH3F	
D9	8-719-300-45	DIODE EM1Z	
D10	8-719-300-45	DIODE EM1Z	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

E HA HB Hc

Ref.No.	Part No.	Description	Remark
R45	1-247-831-00	CARBON 1K 5% 1/6W	
R46	1-247-837-00	CARBON 1.8K 5% 1/6W	
R47	1-206-700-00	METAL OXIDE 33K 5% 2W	F
R48	1-244-927-00	CARBON 180K 5% 1/2W	
R49	1-247-811-00	CARBON 150 5% 1/6W	
R50	1-247-831-00	CARBON 1K 5% 1/6W	
R51	1-247-895-00	CARBON 470K 5% 1/6W	
R52	1-247-839-00	CARBON 2.2K 5% 1/6W	
R53	1-247-863-00	CARBON 22K 5% 1/6W	
R54	1-206-751-00	METAL OXIDE 12K 5% 3W	F
R55	1-247-825-00	CARBON 560 5% 1/6W	
R56	1-247-863-00	CARBON 22K 5% 1/6W	
R57	1-247-865-00	CARBON 27K 5% 1/6W	
R58	1-247-843-00	CARBON 3.3K 5% 1/6W	
R59	1-247-851-00	CARBON 6.8K 5% 1/6W	
R60	1-247-847-00	CARBON 4.7K 5% 1/6W	
R61	1-247-833-00	CARBON 1.2K 5% 1/6W	
R62	1-247-829-00	CARBON 820 5% 1/6W	
R63	1-247-846-00	CARBON 4.3K 5% 1/6W	
R64	1-247-845-00	CARBON 3.9K 5% 1/6W	
R65	1-247-137-00	CARBON 1.8K 5% 1/4W	F
R66	1-247-137-00	CARBON 1.8K 5% 1/4W	F
R67	1-247-137-00	CARBON 1.8K 5% 1/4W	F
R68	1-213-141-00	METAL OXIDE 680 5% 1W	F
R69	1-244-881-51	CARBON 2.2K 5% 1/2W	
R70	1-247-831-00	CARBON 1K 5% 1/6W	
R71	1-247-831-00	CARBON 1K 5% 1/6W	
R74	1-247-839-00	CARBON 2.2K 5% 1/6W	

TRANSFORMER

T1	▲-1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T2	▲-1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T4	▲-1-439-137-00	TRANSFORMER, HORIZONTAL OUTPUT

▲:1-609-357-00 HA BOARD

▲:1-560-455-00 PIN, CONNECTOR 2P

CONNECTOR

HA1	▲:1-560-462-00	PIN, CONNECTOR 6P
HA2	▲:1-560-461-00	PIN, CONNECTOR 5P
HA3	▲:1-560-455-00	PIN, CONNECTOR 2P
HA4	▲:1-560-460-00	PIN, CONNECTOR 4P

RESISTOR

R2	1-247-862-00	CARBON 20K 5% 1/6W
R4	1-247-878-00	CARBON 91K 5% 1/6W
R5	1-247-875-00	CARBON 68K 5% 1/6W
R6	1-247-865-00	CARBON 27K 5% 1/6W
R8	1-247-887-00	CARBON 220K 5% 1/6W
R9	1-247-881-00	CARBON 120K 5% 1/6W

Ref.No.	Part No.	Description	Remark
R10	1-247-865-00	CARBON 27K 5% 1/6W	
R15	1-247-874-00	CARBON 62K 5% 1/6W	
R16	1-247-867-00	CARBON 33K 5% 1/6W	
R17	1-247-885-00	CARBON 180K 5% 1/6W	
R18	1-247-881-00	CARBON 120K 5% 1/6W	

VARIABLE RESISTOR

RV1	1-228-938-00	RES, VAR, CARBON 20K
RV2	1-228-938-00	RES, VAR, CARBON 20K
RV3	1-228-937-00	RES, VAR, CARBON 20K
RV4	1-228-937-00	RES, VAR, CARBON 20K
RV5	1-228-937-00	RES, VAR, CARBON 20K

RV6	1-228-938-00	RES, VAR, CARBON 20K
RV7	1-228-936-00	RES, VAR, CARBON 10K

SWITCH

SW1	1-552-737-00	SWITCH, PUSH
SW2	1-554-439-00	SWITCH, PUSH (2 KEY)
SW3	1-514-633-00	SLIDE SWITCH

▲:1-609-356-00 HB BOARD

CAPACITOR

C1	1-123-620-00	ELECT 10MF 20% 25V
C2	1-123-620-00	ELECT 10MF 20% 25V

CONNECTOR

HB1 ▲:1-560-463-00 PIN, CONNECTOR 8P

VARIABLE RESISTOR

RV1	1-230-145-00	RES, VAR, CARBON 5K
RV2	1-230-145-00	RES, VAR, CARBON 5K
RV3	1-230-145-00	RES, VAR, CARBON 5K
RV4	1-230-145-00	RES, VAR, CARBON 5K

SWITCH

SW1 1-516-970-00 SWITCH, SLIDE

▲:1-610-153-00 HC BOARD

▲:4-36/-612-00 HOLDER (B), LED

DIODE

D1 8-719-909-20 DIODE GL9NG2

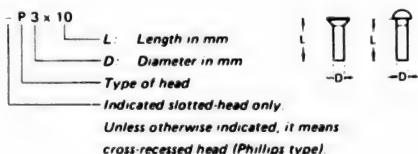
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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
MISCELLANEOUS *****				*****			
△	1-230-089-21	RESISTOR ASSY, HIGH-VOLTAGE (FOCUS BLOCK)		SP1	1-503-255-00	SPEAKER	
△	1-235-219-00	FILTER, NOISE (L.F.T)		SP2	1-503-255-00	SPEAKER	
△	1-413-152-21	SWITCHING REGULATOR (TK-03)		SW1	△ 1-553-410-00	SWITCH, PUSH (POWER)	
△	1-451-243-11	DEFLECTION YOKE (SY-130A)		SW2	△ 1-552-535-00	SWITCH, POWER VOLTAGE CHANGE	
△	1-452-302-00	CRT NECK ASSEMBLY		T1	△ 1-447-612-00	TRANSFORMER, POWER	
*****				*****			
△	1-453-095-12	DC BLOCK, HIGH-VOLTAGE (F.B.T)		ACCESSORIES AND PACKING MATERIALS *****			
	1-536-378-XX	L-TYPE TERMINAL STRIP		Part No.	Description	Remark	
	1-536-401-XX	L-TYPE TERMINAL STRIP		△ 1-551-812-00	CORD, POWER		
△	8-736-051-05	CRT SD-130(G)		4-362-853-00	LABEL, VOLTAGE		
△	8-736-052-05	CRT SD-130(B)		4-491-213-22	INSTRUCTION		
△	8-736-053-05	CRT SD-130(R)		4-491-697-11	MANUAL, INSTRUCTION		
				4-493-829-11	MANUAL, INSTRUCTION		
C901	1-102-327-00	CAP, CERAMIC 330PF		4-349-251-00	BAG, PROTECTION		
C902	1-102-327-00	CAP, CERAMIC 330PF		4-362-863-00	INDIVIDUAL CARTON (VPH-1020Q ONLY)		
C903	1-102-327-00	CAP, CERAMIC 330PF		4-362-865-00	INDIVIDUAL CARTON (VPH-722Q ONLY)		
C904	1-102-327-00	CAP, CERAMIC 330PF		4-362-870-00	CUSHION (UPPER) (ASSY)		
C905	1-102-327-00	CAP, CERAMIC 330PF		4-362-871-00	CUSHION (LOWER) (ASSY)		
C906	1-102-327-00	CAP, CERAMIC 330PF					
C911	1-130-545-00	CAP, FILM 0.000MF					
CNJ1	△ 1-509-547-00	3P INLET, AC IN					
CNJ2	1-556-937-00	CONNECTOR ASSY, MULTI					
CNJ9	1-509-095-00	8P MULTI SOCKET					
D911	3-719-903-09	DIODE V30N					
Q901	8-729-301-62	TRANSISTOR 2SC1116A					
Q902	8-729-301-32	TRANSISTOR 2SC1413A					
Q903	8-729-301-32	TRANSISTOR 2SC1413A					
Q904	8-729-301-62	TRANSISTOR 2SC1116A					
Q905	8-729-311-42	TRANSISTOR 2SC1114					
R901	1-202-822-00	RES, SOLID 2.2K	1/2W				
R902	1-202-822-00	RES, SOLID 2.2K	1/2W				
R903	1-202-822-00	RES, SOLID 2.2K	1/2W				
R904	1-202-822-00	RES, SOLID 2.2K	1/2W				
R905	1-202-822-00	RES, SOLID 2.2K	1/2W				
R906	1-202-822-00	RES, SOLID 2.2K	1/2W				
R907	△ 1-217-183-00	RES, WIREWOUND 2.7	10W				
R911	1-202-846-00	RES, SOLID 470K	1/2W				
R912	1-202-846-00	RES, SOLID 470K	1/2W				
R913	1-202-846-00	RES, SOLID 470K	1/2W				
R917	1-206-749-00	RES, METAL OXIDE FILM 10.00K	3W F				
R918	1-206-749-00	RES, METAL OXIDE FILM 10.00K	3W F				
R919	1-206-738-00	RES, METAL OXIDE FILM 3.60K	3W F				
R920	1-206-738-00	RES, METAL OXIDE FILM 3.60K	3W F				
R921	1-246-433-00	RES, CARBON 22	1/4W				
R922	1-246-433-00	RES, CARBON 22	1/4W				
R923	1-206-439-00	RES, METAL OXIDE FILM 1.00	2W F				
R924	1-206-429-00	RES, METAL OXIDE FILM 1.00	2W F				
SG1	1-519-063-XX	DISCHARGING CAP					
SG2	1-519-063-XX	DISCHARGING CAP					
SG3	1-519-063-XX	DISCHARGING CAP					
SG4	1-519-063-XX	DISCHARGING CAP					
SG5	1-519-063-XX	DISCHARGING CAP					
SG6	1-519-063-XX	DISCHARGING CAP					

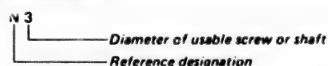
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HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan head screw	binding head (B) screw for replacement
PWH		pan head screw with washer face	binding head (B) screw and flat washer for replacement
PS PSP		pan head screw with spring washer	binding head (B) screw and spring washer for replacement
PSW PSPW		pan head screw with spring and flat washers	binding head (B) screw and spring and flat washers for replacement
R		round head screw	binding head (B) screw for replacement
K		flat countersunk head screw	
RK		oval countersunk head screw	
B		binding head screw	
T		truss head screw	binding head (B) screw for replacement
F		flat fillister head screw	
RF		fillister head screw	
BV		brazier head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex LW3, internal
LW		external-tooth lock washer	ex LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip type retaining ring	

SONY COLOR VIDEO PROJECTOR VPH-722Q/1020Q

US Model


VPH-722Q

Chassis No. SCC-519A-A


VPH-1020Q

Chassis No. SCC-520A-A







SAFETY RELATED COMPONENT WARNING!!



COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.


SEE ADDITIONAL
INFORMATION

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

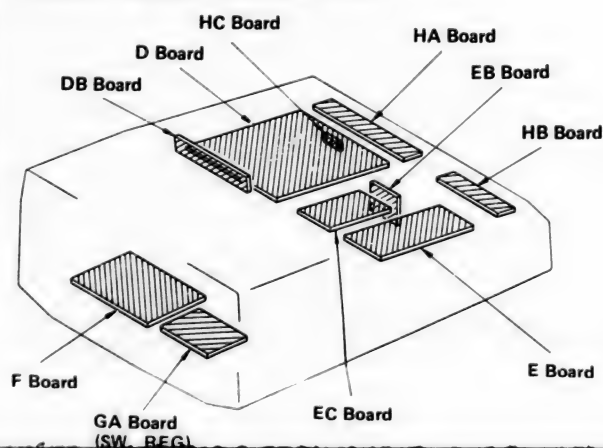
Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics.
 - All resistors are in ohms, $\frac{1}{4}$ W unless otherwise noted (and D board resistors are $\frac{1}{4}$ W).
 - k: 1000 Ω , M: 1000 k Ω .
 -  : nonflammable resistor.
 -  : internal component.
 -  : panel designation.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.
 - When replacing components identified by  , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved. (Refer to R11, 12, 13, R21, 22 and R37, 38 adjustment on page 19-22.)
- When replacing the part in below table, be sure to perform the related adjustment.

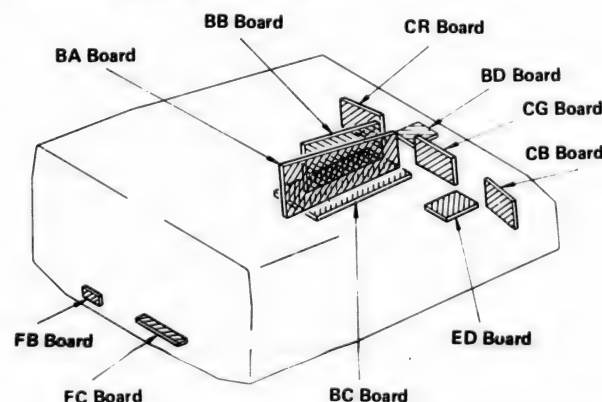
Part replaced ()	Adjustment ()
Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK	R11, 12, 13, R21, 22 and R37, 38 adjustment

- All voltages are AC.
- Voltages are given with respect to ground unless otherwise noted.
- Readings are taken with a 10 M Ω digital multimeter.
- Readings are taken with a color bar signal input.
- B — bus
- S — bus
- Voltage variations may be noted during normal production tolerances.
- adjustment for repair
- No mark — PAL mode
- NTSC 4:43 mode
- NTSC 3:58 mode
- SECAM mode
- If the part marked  is replaced, the related adjustment should be made.

• CIRCUIT BOARDS LOCATION (1/2)



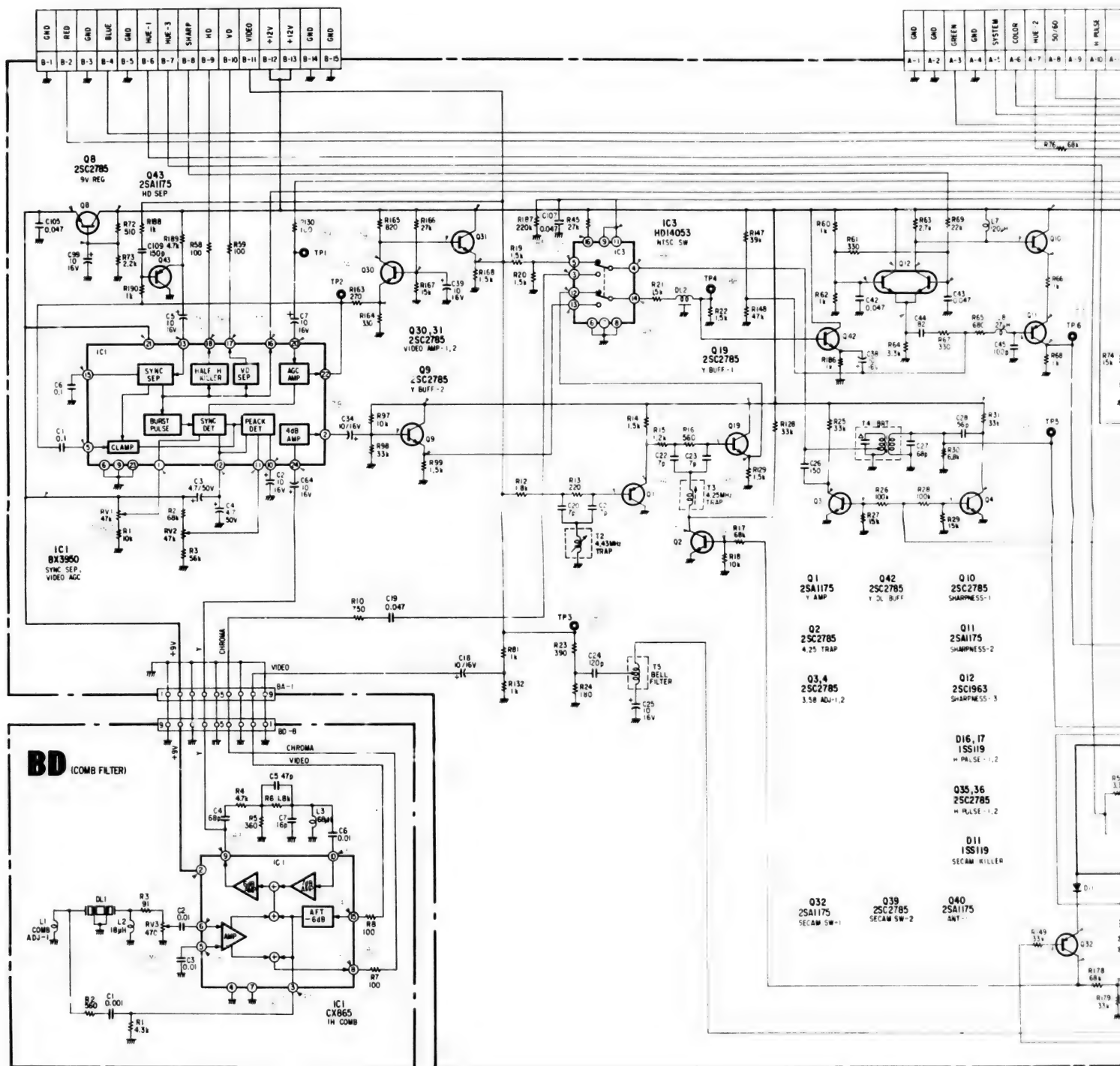
• CIRCUIT BOARDS LOCATION (2/2)

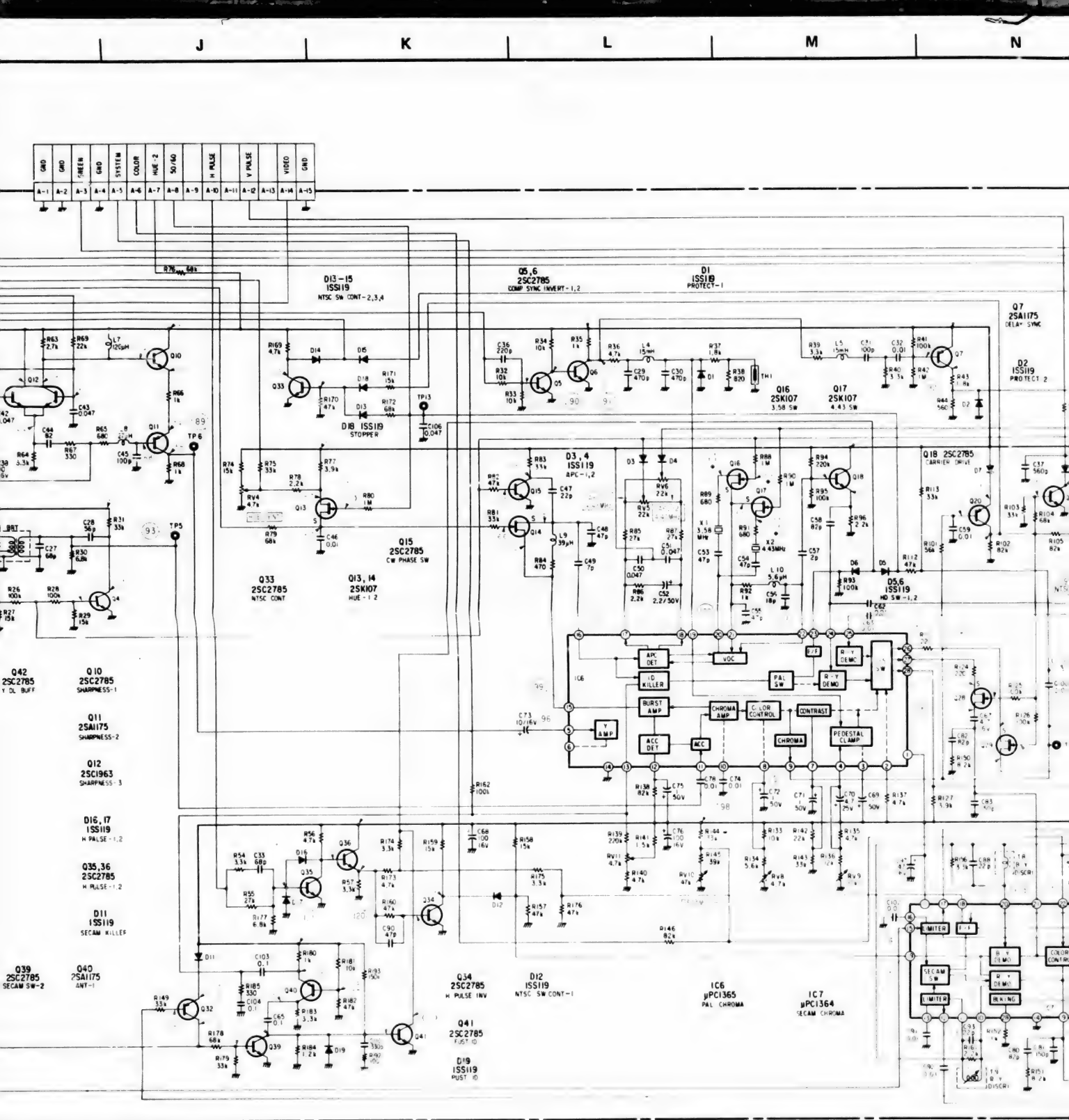


SCHEMATIC



SCHEMATIC DIAGRAM





N

O

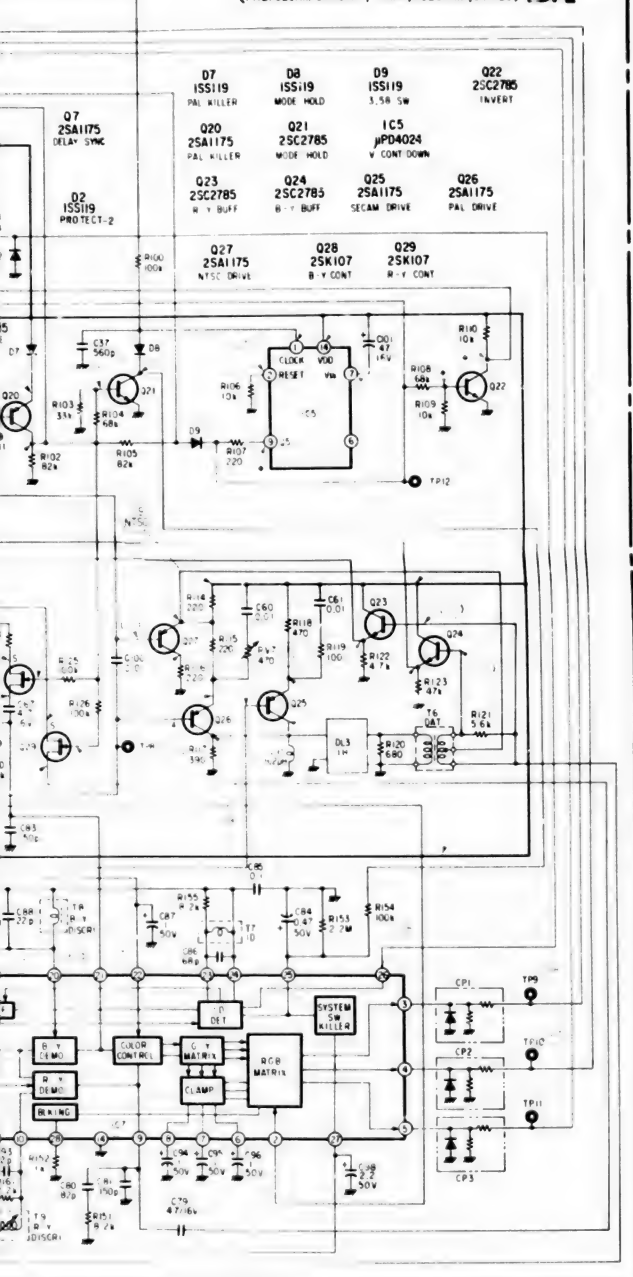
P

Q

R

(SYNC SEP, VIDEO AGC, NTSC/SECAM/PAL DRIVE,
PAL/SECAM CHROMA, Y AMP, VIDEO AMP, 9V REG)

BA



1 0.48Vp-p (V)



2 5.6Vp-p (V)



3 0.78Vp-p (V)



4 24Vp-p (V)



5 0.72Vp-p (V)



6 26Vp-p (V)



7 2Vp-p (H)



8 9.8Vp-p (H)



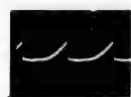
9 6Vp-p (H)



10 34Vp-p (V)



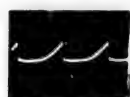
11 1.4Vp-p (V)



12 2Vp-p (V)



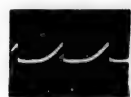
13 1.4Vp-p (V)



14 2Vp-p (V)



15 1.4Vp-p (V)



16 2Vp-p (V)



17 34Vp-p (V)



18 6Vp-p (H)



19 5Vp-p (V)



20 1.75Vp-p (V)



21 0.7Vp-p (V)



22 5.6Vp-p (V)



23 3.2Vp-p (V)



24 11Vp-p (V)



25 2.5Vp-p (V)



26 12Vp-p (V)



27 1.6Vp-p (H)



28 1Vp-p (H)



29 4.4Vp-p (H)



30 3.3Vp-p (H)



31 2.9Vp-p (V)



32 2.9Vp-p (V)



33 2.5Vp-p (V)



34 2.5Vp-p (V)



35 2.9Vp-p (V)



36 3.2Vp-p (H)



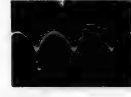
37 3Vp-p (H)



38 1.6Vp-p (H)



39 3Vp-p (H)



40 3.2Vp-p (H)



41 3Vp-p (H)



42 14Vp-p (V)



43 14Vp-p (V)



44 0.3Vp-p (V)



45 0.34Vp-p (V)



46 3Vp-p (H)



47 3.2Vp-p (V)



48 1.8Vp-p (H)

1

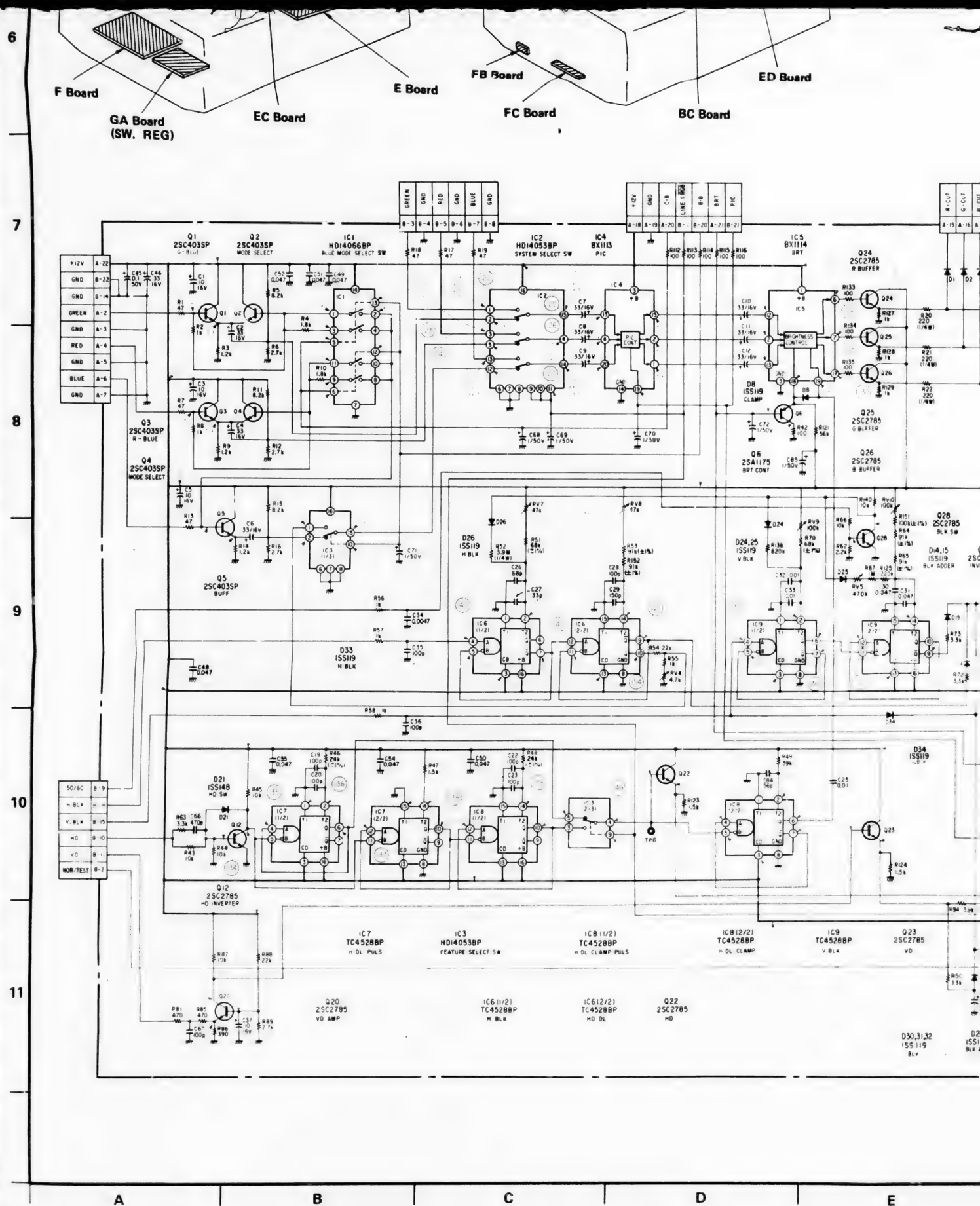
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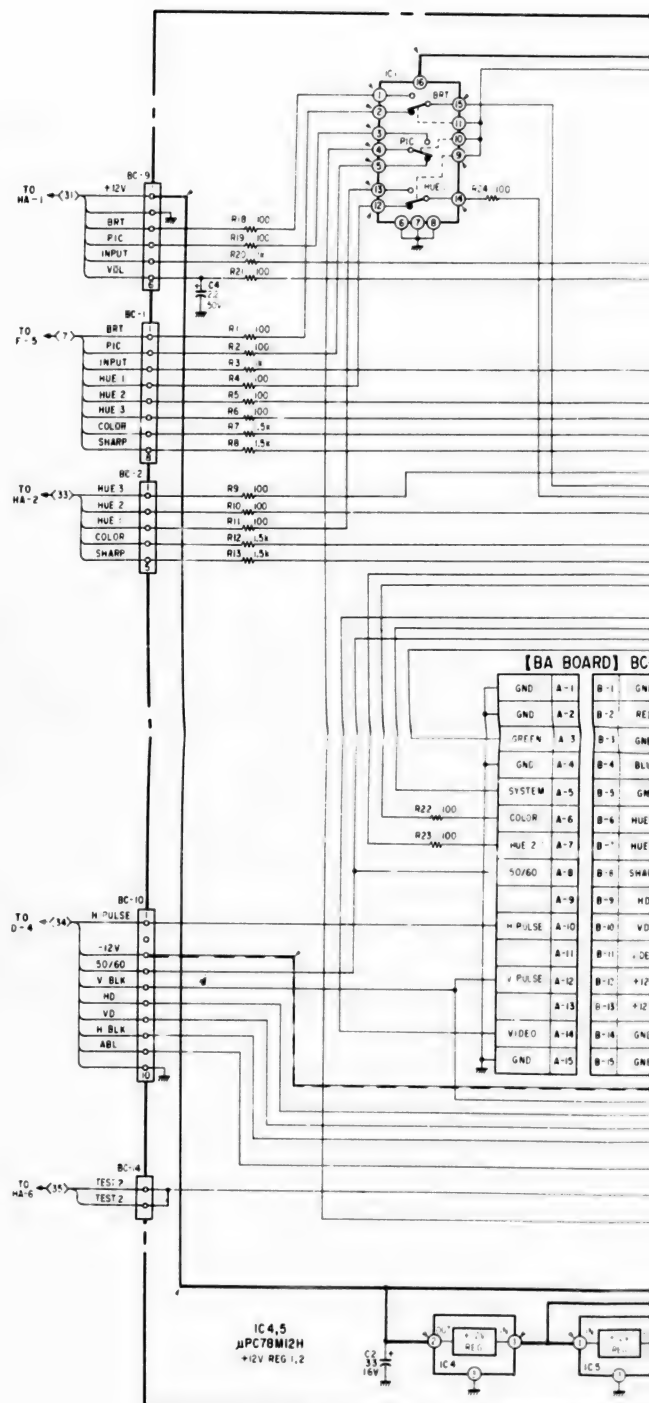
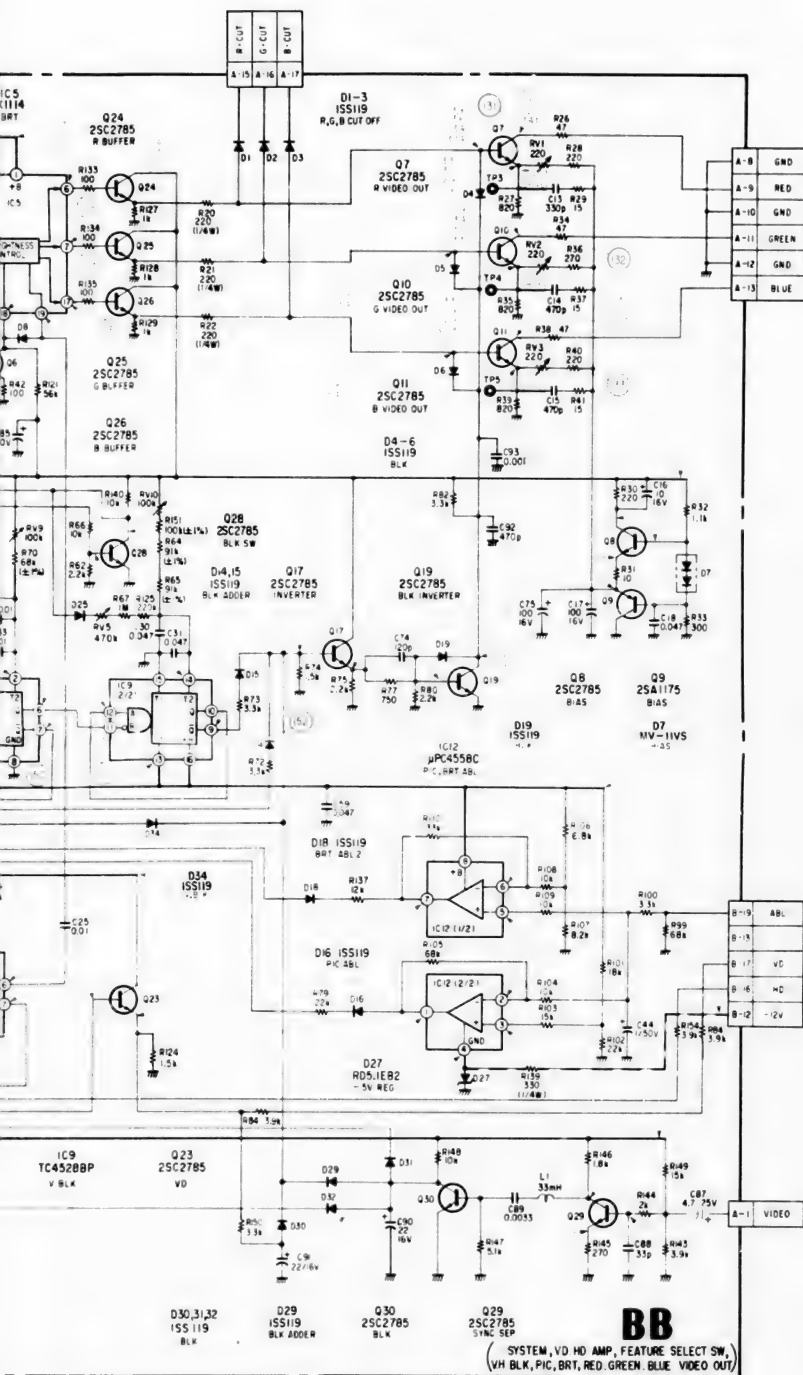
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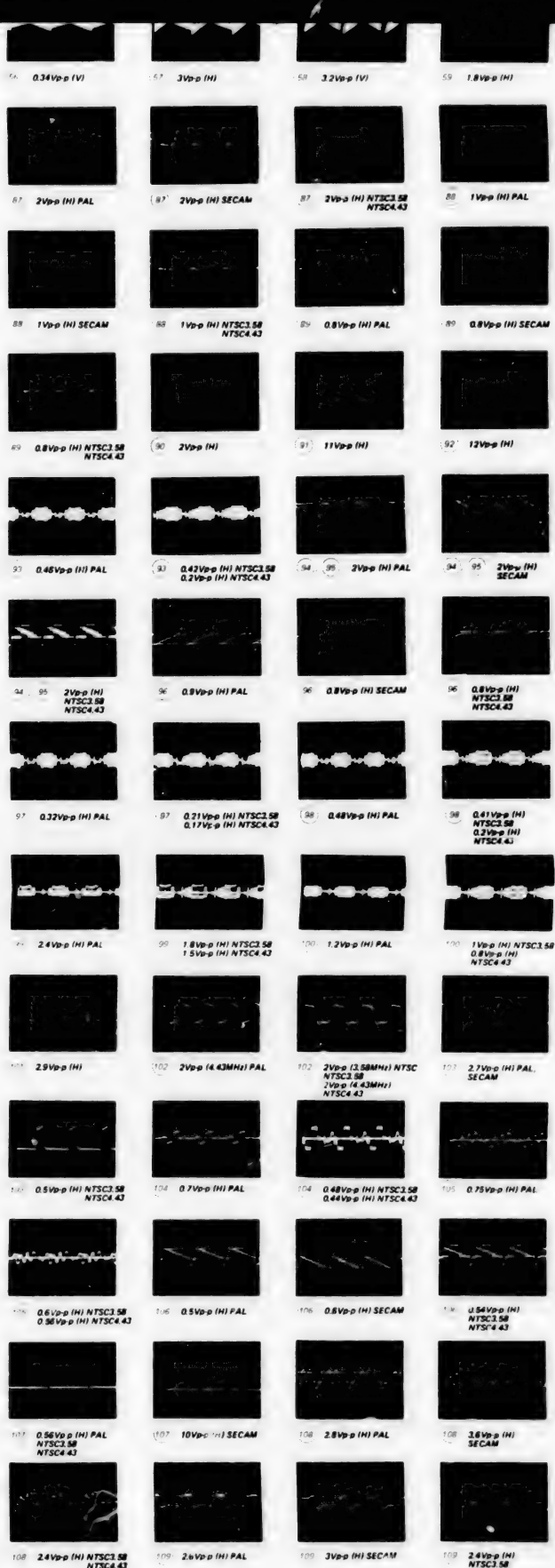
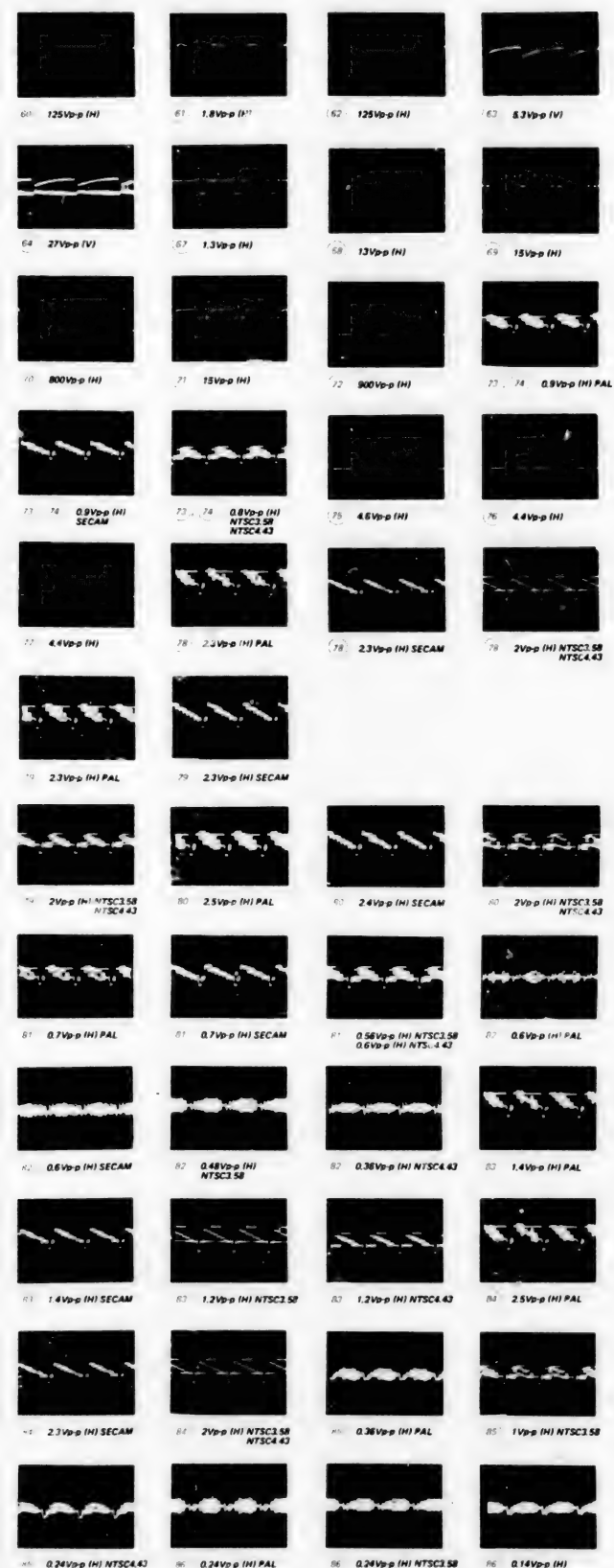
5

6











SONY
COLOR VIDEO PROJECTOR
VPH-722Q/1020Q

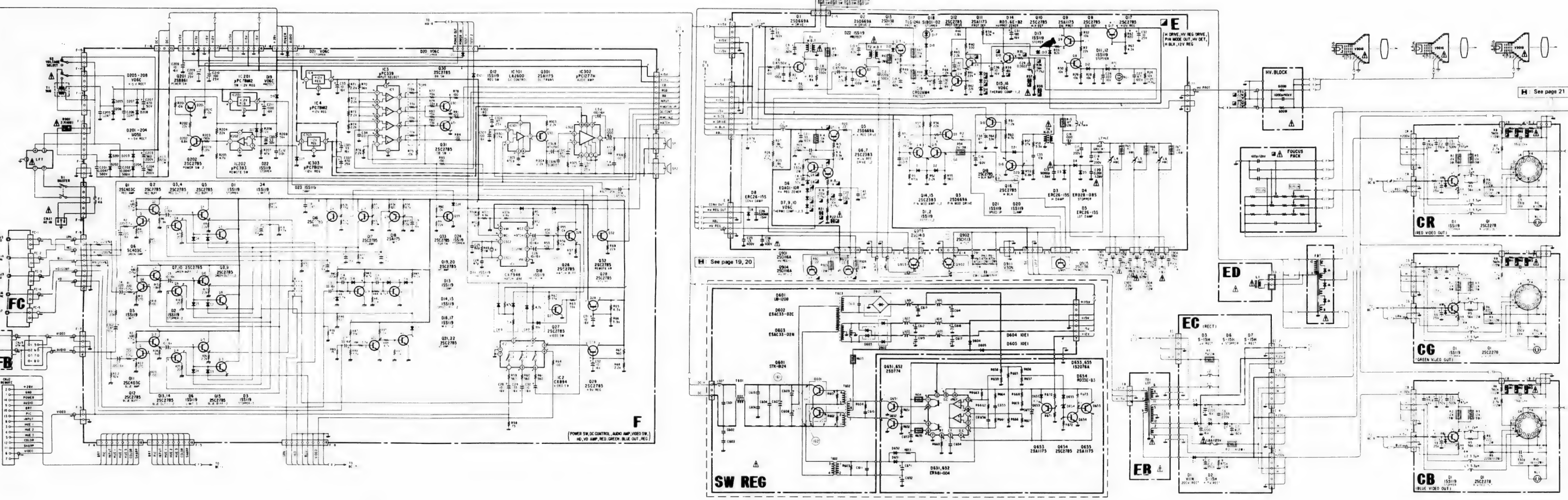
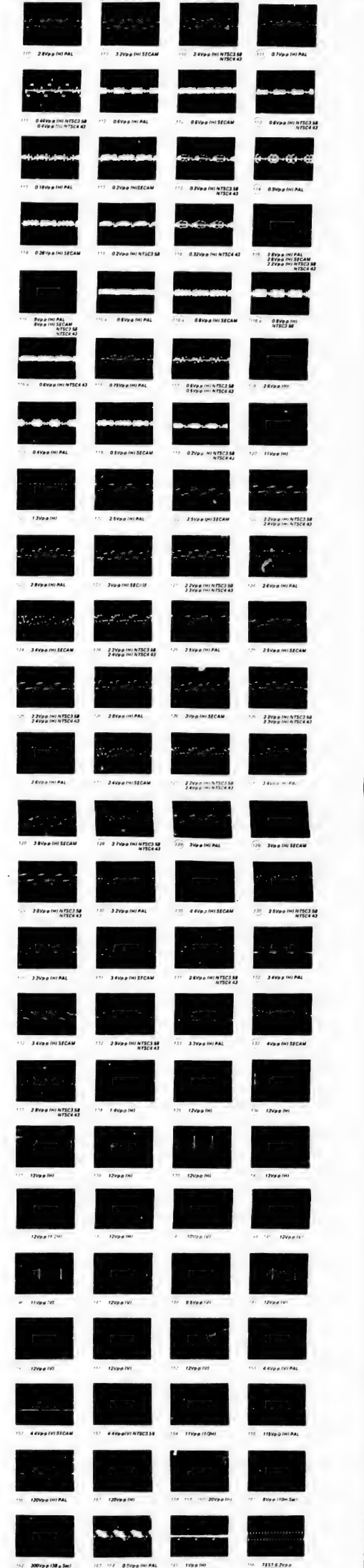
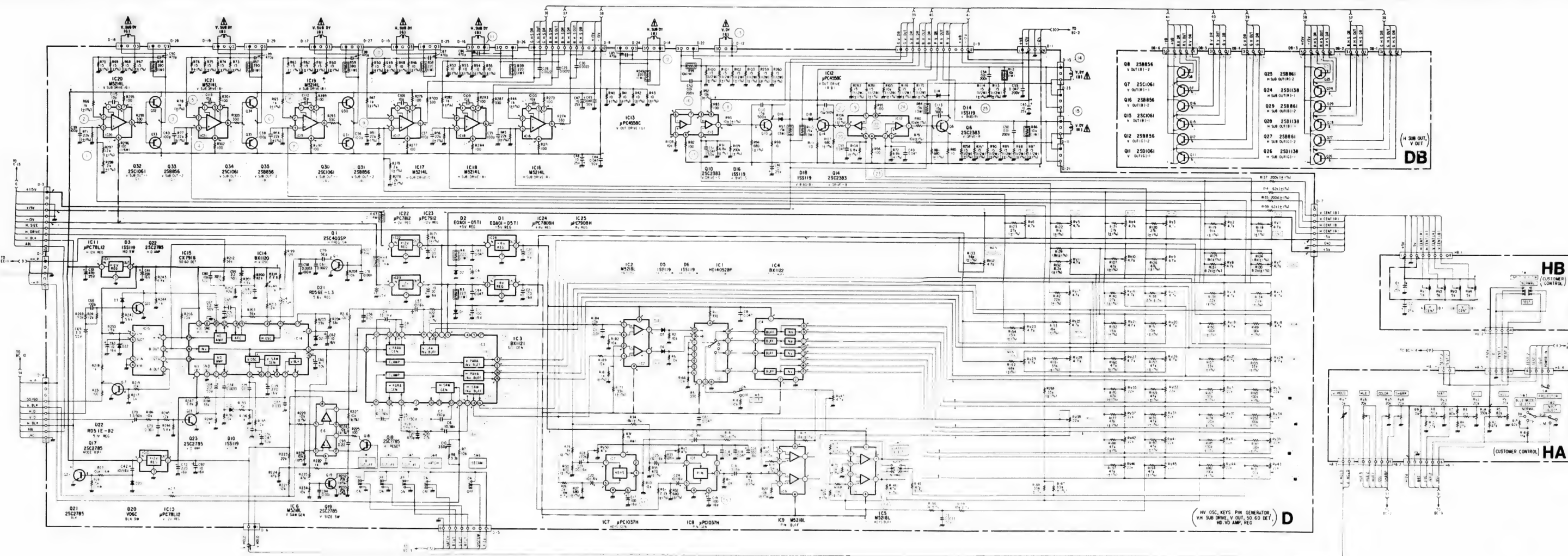
US Model
VPH-722Q
Chassis No. SCC-519A-A
VPH-1020Q
Chassis No. SCC-520A-A

SAFETY RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY SHADING AND MARK **A** ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

Note: The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- Note:
- All capacitors are in μF unless otherwise noted. pF : μF 50 WV or less are not indicated except for electrolytics.
 - All resistors are in ohms, $\frac{1}{2}$ W unless otherwise noted (and D board resistors are $\frac{1}{4}$ W).
 - k: 1000 Ω ; M: 1000 k Ω .
 - **□**: nonflammable resistor.
 - **△**: internal component.
 - **□**: panel designation.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - The components identified by **H** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.
 - When replacing components identified by **H**, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by **H** and repeat the adjustment until the specified value is achieved. (Refer to R11, 12, 13, R21, 22 and R37, 38 adjustment on page 19-22.)
 - When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ()	Adjustment ()
Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, R15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK	R11, 12, 13, R21, 22 and R39 38 adjustment



VPH-722Q/1020Q

SONY SERVICE MANUAL

US Model

VPH-722Q

Chassis No. SCC-519A-A

VPH-1020Q

Chassis No. SCC-520A-A

December, 1983

CORRECTION-1

Correct the service manual as shown below.

 : corrected portion and added portion

SECTION 3. SAFETY RELATED ADJUSTMENT

Page	Correct	Incorrect
19	<p>(3) Feed in a color-bar pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).</p>	<p>(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).</p>
20	<p>R21, R22 HV REG Adjustment</p> <p>(1) Confirm that the POWER switch is in OFF position.</p> <p>(2) Connect the positive lead of the high tension meter to the HV. DC. block and the negative lead to the ground lug beside the heat sink as shown in Fig. 3-1.</p> <p>(3) Feed in a color-bar pattern from a color-bar/pattern generator and G2 control in minimum, R. G. B cut OFF Switch (D BOARD) to ON. (Be sure to synchronize the picture).</p> <p>(4) Turn the POWER switch on ON and confirm that the voltage on the high tension meter is 31.0 kV \pm 0.3 kV.</p> <p>(5) If necessary, select R21 and R22 (1/4 W carbon resistor) and repeat above steps.</p> <p>(6) Turn the POWER switch to OFF and disconnect the positive and negative leads of the high tension meter.</p> <p>(7) Disconnect the resistor and mount it.</p>	<p>R21, R22 HV REG Adjustment</p> <p>(1) Confirm that the POWER switch is in OFF position.</p> <p>(2) Connect the positive lead of the high tension meter to the anode of the picture tube and the negative lead to the ground lug beside the heat sink.</p> <p>(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).</p> <p>(4) Turn the POWER switch on ON and confirm that the voltage on the high tension meter is 30.8 kV \pm 0.3 kV.</p> <p>(5) If necessary, select R21 and R22 (1/4 W carbon resistor) and repeat above steps.</p> <p>(6) Turn the POWER switch to OFF and disconnect the positive and negative leads of the electrostatic voltmeter.</p> <p>(7) Disconnect the resistor and mount it.</p>
20	<p>D8 cathode</p> <p>E board</p> <p>D8 anode</p> <p>network</p> <p>D1</p> <p>C1</p> <p>C2</p> <p>C3</p> <p>C4</p> <p>(+)</p> <p>(-)</p> <p>digital multimeter</p> <p>Fig. 3-2</p> <p>(3) Feed in a color-bar pattern from a color-bar pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).</p>	<p>D8 cathode</p> <p>E board</p> <p>D8 anode</p> <p>network</p> <p>D1</p> <p>C1</p> <p>C2</p> <p>C3</p> <p>C4</p> <p>(+)</p> <p>(-)</p> <p>digital multimeter</p> <p>Fig. 3-2</p> <p>(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).</p>



MON

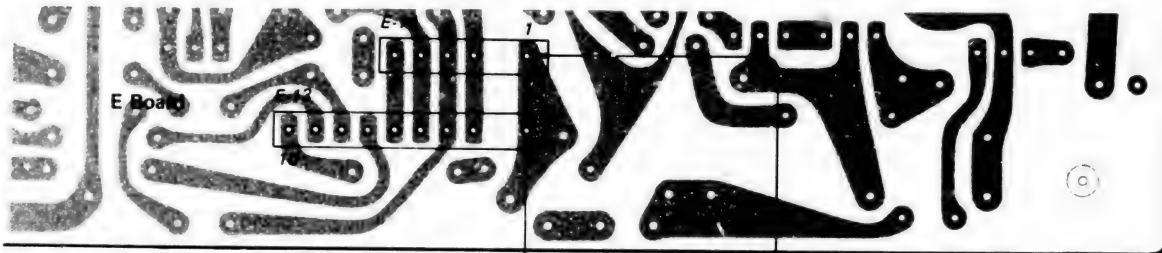
Added to P21

(6) Turn the POWER switch to OFF and disconnect the network and the digital multimeter.

O. V. L. Operation Checking

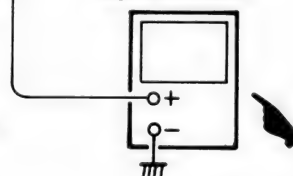
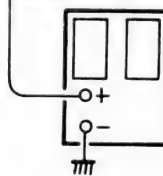
Replace the SW. REG. confirm O. V. L. circuit operate. If this not satisfied change the SW. REG.

- (1) Supply DC Voltage to with regulated-dc power supply.
- (2) Set the G2 control to minimum, and R. G. B cut OFF switch to ON.
- (3) Confirm that the O. V. L. circuit operation when less than 130 V dc.



regulated-dc power supply

digital multimeter



+B MAX CHECK

Replace the SW. REG. confirm +B voltage. If this not satisfied change the SW. REG.

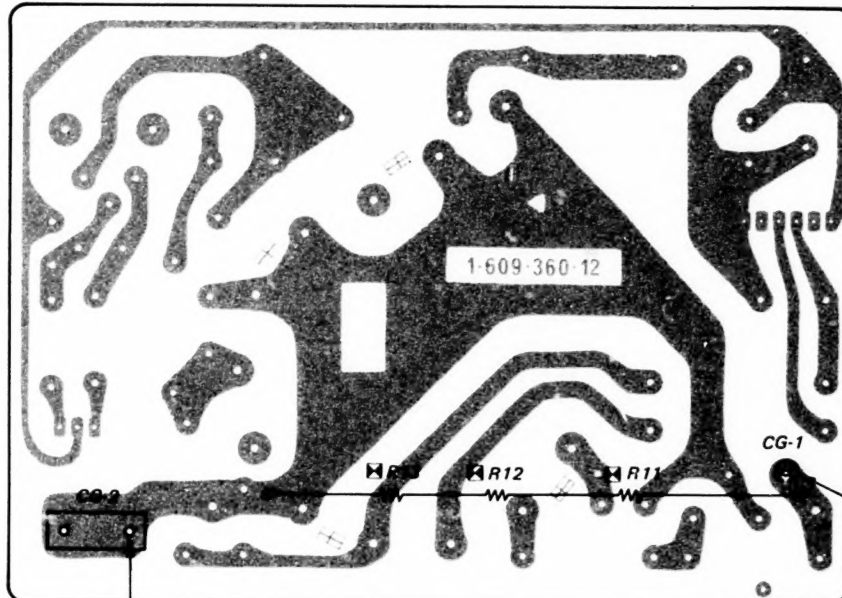
- (1) Supply 130 V ac to with variable auto-transformer.

Page	Correct	Incorrect								
21	<div>G2 MAX ADJUSTMENT</div> <p>(4) Confirm that the high tension meter indication is less than 1000 V dc.</p>	<div>G2 MAX ADJUSTMENT</div> <p>(4) Confirm that the digital multi meter (A) indication is less than 1000 V ac.</p>								
33 61	<table><tr><th>Part replaced (<input checked="" type="checkbox"/>)</th><th>Adjustment (<input checked="" type="checkbox"/>)</th></tr><tr><td>Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK R11, R12, R13, R952</td><td>R11, 12, 13, R21, 22 and R37, 38 adjustment</td></tr></table>	Part replaced (<input checked="" type="checkbox"/>)	Adjustment (<input checked="" type="checkbox"/>)	Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK R11, R12, R13, R952	R11, 12, 13, R21, 22 and R37, 38 adjustment	<table><tr><th>Part replaced (<input checked="" type="checkbox"/>)</th><th>Adjustment (<input checked="" type="checkbox"/>)</th></tr><tr><td>Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK</td><td>R11, 12, 13, R21, 22 and R37, 38 adjustment</td></tr></table>	Part replaced (<input checked="" type="checkbox"/>)	Adjustment (<input checked="" type="checkbox"/>)	Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK	R11, 12, 13, R21, 22 and R37, 38 adjustment
Part replaced (<input checked="" type="checkbox"/>)	Adjustment (<input checked="" type="checkbox"/>)									
Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK R11, R12, R13, R952	R11, 12, 13, R21, 22 and R37, 38 adjustment									
Part replaced (<input checked="" type="checkbox"/>)	Adjustment (<input checked="" type="checkbox"/>)									
Q5, Q6, Q7, Q10, Q11, Q901, Q904 D6, D7, D9, D10, D14, D15, D16, C23, R18, R19, R20, R21, R22, R35, R36, R37, R38, R39, R951 E board complete, FOCUS PACK	R11, 12, 13, R21, 22 and R37, 38 adjustment									
59	<div>E BOARD</div>									

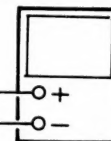
G2 MAX ADJUSTMENT

CG Board

Incorrect

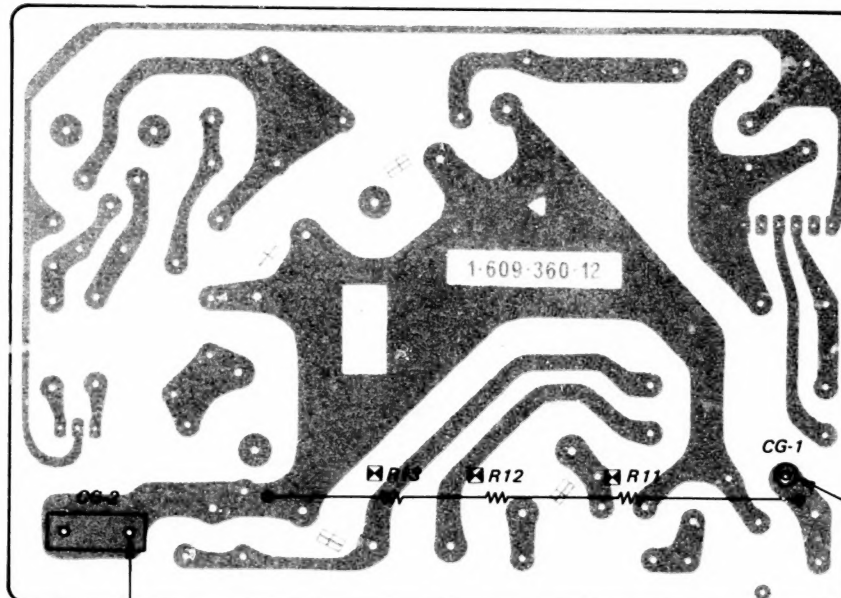


digital multimeter (A)



CG Board

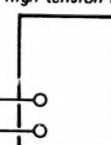
Correct



positive lead

high tension meter

negative lead



VPH-722Q/1020Q

9-963-152-91

Sony Corporation

83L0555-1
Printed in Japan
© 1983

VPH-722Q/1020Q

SONY SERVICE MANUAL

US Model

VPH-722Q

Chassis No. SCC-519A-A

VPH-1020Q

Chassis No. SCC-520A-A

January, 1984

SUPPLEMENT-1

SUBJECT: MODIFICATION OF G2 MAX ADJUSTMENT

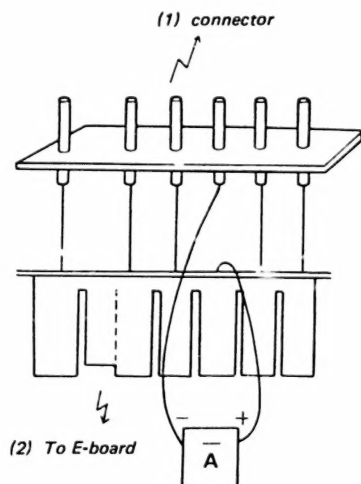
File this supplement with Service Manual.

• SECTION 3. SAFETY RELATED ADJUSTMENT

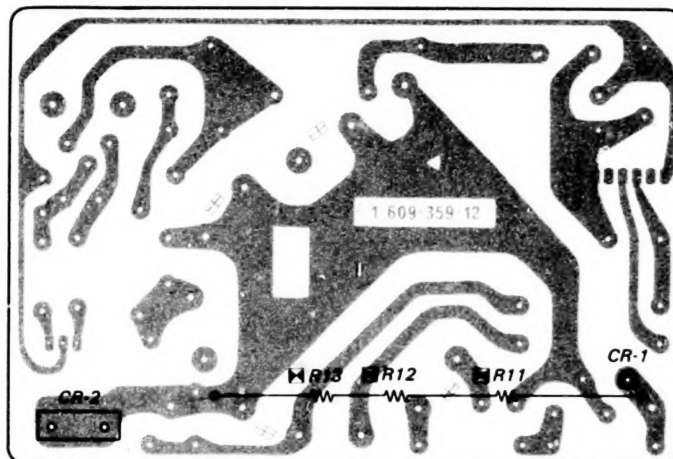
3-2. C BOARD (CG, CR and CB BOARD) R.G.B G2 VR ADJUSTMENT AT MAX, (R11, R12, R13)

Adjust each pick-up tube of R. G. B in a sequential order.

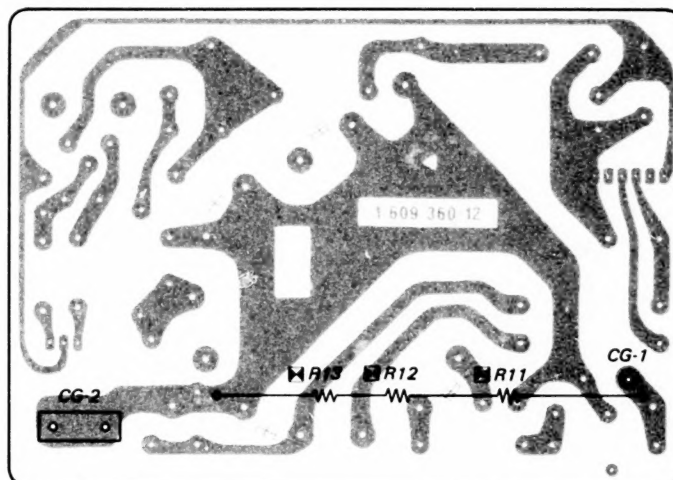
- (1) Confirm that the power is turned off.
- (2) Disconnect the E-8 connector on the E board and install the tool shown in the figure.
Connect a DC ammeter (3 mA range) with the E board side connected to plus (+) side.
- (3) Set the G2 VR (for the screen) at MIN and turn on the power. (In this case, set BRT, PIX at MAX and input the colour bar signal.)
- (4) When the voltage at G2 is gradually increased, the current flow may stop temporarily (near 2.6 mA) due to ABL operation.
If the current flow exceeds 2.6 mA, turn off the power and mount the resistors R11, R12 and R13 (in series at $22\text{ M}\Omega$ RC ($\frac{1}{2}\text{ W}$)) as shown in the figure.
- (5) Confirm that the Ampere on the Ammeter is less than 2.6 mA.
- (6) If necessary select R11, R12 and R13 and repeat above steps.
- (7) Adjust other G2 VRs in the same way as described above.
- (8) Turn off the power and reconnect the E-8 connector.



CR Board



CG Board



CB Board

